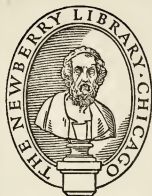


MONTANA
AND Yellowstone PARK
Robt. E. Abraham



D. H. Cuthbert

Albion

Montana

MONTANA

AND

Yellowstone*National*Park.

FACTS AND EXPERIENCES ON THE

FARMING, STOCK RAISING, MINING, LUMBERING,
AND OTHER INDUSTRIES OF MONTANA,

AND NOTES ON THE

CLIMATE, SCENERY, GAME, FISH AND MINERAL SPRINGS,

WITH FULL AND RELIABLE DATA ON

ROUTES, DISTANCES, RATES OF FARE, EXPENSES OF LIVING, WAGES, SCHOOL
AND CHURCH PRIVILEGES, SOCIETY, MEANS OF ACQUIRING HOMES, AND
OTHER VALUABLE AND RELIABLE INFORMATION, APPLICABLE
TO THE WANTS OF THE

CAPITALIST, HOMESSEEKER, OR TOURIST.

By ROBERT E. STRAHORN.

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1881.

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MADISON CANON, MONTANA.—*Theo. Moran.*

MONTANA TERRITORY.

CHAPTER I.

A BIT OF HISTORY—LOCATION AND EXTENT.

THE discovery of the region now known as Montana is attributed to Chevalier de la Verendrye and his brother, who were the first white men that set foot upon its soil. These brothers, who had pushed their way westward as far as the Lake of the Woods, left that region on the 29th of April, 1742. They proceeded up the Assiniboine river, and so across to the Upper Missouri, passed the mouth of the Yellowstone river, and arrived in sight of the Rocky Mountains on the 1st of January, 1743, and on the 12th ascended them. On May 19, 1744, they had returned to the Upper Missouri, and on a butte they erected a stone monument twelve feet high and twelve feet square at the base, in which they put a leaden plate of the arms of France, thus taking possession, for that government, of all this region. Returning, they reached the Lake of the Woods on July 2, 1744. The entire country west of the Mississippi, then known as Louisiana, was, in 1803, sold to the United States by Napoleon Bonaparte, on behalf of the French nation, for \$15,000,000. Montana, the youngest and most thinly settled commonwealth of the great galaxy, since created out of this vast domain, has already added more than ten times that amount of gold and silver to the world's currency. The products of her broad perennial pastures and many fertile valleys have, in these few years of her infancy, probably aggregated a valuation equal to her gold and silver yield.

THE LEWIS AND CLARKE EXPEDITION.

Next to nothing was known of this vast region called the Province of Louisiana; and, mainly through the influence of President Jefferson, Congress in 1803 passed a resolution and made an appropriation for its exploration. Captain Merriweather Lewis, of the United States Army, was selected to take charge of the expedition, and he associated with him Captain William Clarke, also of the army, as second in command. The expedition was fitted out at St. Louis and was composed of forty-three persons, with one batteau and three pirogues, which was provided with sails. The party set out from St. Louis May 14, 1804, under the following general instructions from President Jefferson: "The object of your mission is to explore the Missouri river and such principal stream of it as by its course and communication with the waters of the Pacific ocean, whether the Columbia, Oregon, Colorado, or any other river may offer the most direct and practicable water communication across the continent for the purpose of commerce."

The expedition was divided into two companies, one going by land for the purpose of hunting and fishing, but joining at night the other company that went in boats. They made good progress, and on the 27th of October went into winter quarters at a large Mandan Indian village and built Fort Clarke, about sixty miles above the present town of Bismarek, a river distance of 1,674 miles from St. Louis. They remained here through the winter of 1804-5, leaving on the 8th of April following. On the 27th of July, 1805 they reached the three forks of the Missouri, a total distance by river of 2,858 miles. They named the eastern fork the Gallatin, the middle fork the Madison and the western fork the Jefferson. On the 12th of August they reached the summit of the Rocky Mountains. Thus, "leaving the hidden sources of the Missouri, which had never yet been seen by civilized man, and following a descent of three-quarters of a mile to the westward, they reached a handsome, bold creek of cold, clear water, where they stopped to taste for the first time the waters of the Columbia."

Pursuing their tedious way on foot, transporting their goods on Indian pack-horses, at times so scarce of food as to be obliged to kill horses for subsistence and to purchase Indian dogs to eat, they reached the Columbia river proper on

the 15th of September, and on the 7th of November for the first time obtained a view of the Pacific ocean.

They wintered at a Clatsop Indian village a few miles below the mouth of the Columbia, and on the 23d of March, 1806, set out on their return, recrossing the mountains July 3. Here they divided into three parties, one going north along the eastern base of the mountains to the Marias river and down that stream to its juncture with the Missouri, twelve miles below where Fort Benton now stands. The second party went southeast over to the Yellowstone and down that river, and the third party came down the Missouri and joined the first party at the mouth of the Marias, when they together continued down the Missouri to the mouth of the Yellowstone, there joining the second party. The expedition being again consolidated, they proceeded on their return trip, and on the 23 of September, 1806, reached St. Louis, where by many they had been given up for lost.

In a journey through the unbroken wilderness of thousands of miles, among savage and warlike tribes, and surrounded by many hardships and dangers, during a period of over two years and four months, they had lost but one man, who died of fever. It was one of the most remarkable and successful expeditions ever made, the information obtained being at that time almost invaluable, and proving that President Jefferson got a bargain in the purchase of "Louisiana."

DISCOVERIES OF GOLD.

The first discovery of gold in the territory which is now Montana, was made on Gold creek, in what is now Deer Lodge county, in 1852, by a Scotch half-breed named Francois Finlay. But no mines were found that would pay. In 1856 small quantities were discovered by John Saunders and Robert Hereford, and in 1858 some fair "diggings" were found by James and Granville Stuart, Thomas Adams and Reece Anderson. The determined pioneers were now on the right track, for those gulches of Deer Lodge county have since produced over \$30,000,000. Other discoveries were made at various times and places during the next three years, but the yellow metal was never found in considerable quantities until in July, 1862, when the famous gulches of Grasshopper creek, near where Bannack now stands, first showed their shining wealth.

The fame of these diggings spread with wonderful rapidity, and in the following spring thousands of gold-hunters rushed in from all over the West, to assist in inaugurating the first important mining operations of the Territory. Grass-hopper gulch and bars have yielded their millions since, and are producing to this day. In May, 1863, other gulch mines were discovered along Horse Prairie creek, thirty miles southwest of Bannack. February 1st, of the same year, Wm. Fairweather and others left Bannack to prospect the Big Horn range, but were driven back by Crow Indians on Gallatin river, when they had made less than one-third of the distance. Halting at noon on their hasty return at Alder creek, eighty miles east of Bannack, Fairweather, while the others were preparing lunch, panned out a little gravel near the camp, and to his great delight and surprise, obtained from 25 cents to \$2 in gold to the pan. Friends at Bannack were immediately advised. Many rushed to the scene of the latest strike, and June 6th, 1863, Fairweather District was organized. Mining at once began, and the entire gulch for sixteen miles was being worked in an incredibly short time. Alder gulch has yielded over \$60,000,000—half of the amount in the three years following its discovery. It was undoubtedly the richest gulch ever discovered in any country. Virginia City was soon a full-fledged town of 20,000 inhabitants, and became the first Territorial capital.

Here in August, 1875, says the local historian, "near the wild spot where twelve years before the hidden treasure was first revealed to him, William Fairweather was laid down to rest. Like the unfortunate discoverer of the Comstock lode, whose bones also repose in Montana, this erratic soul stranded on the shoals of dissipation, although each in his day had turned a key, the one silver and the other golden, which unlocked millions for others."

In the fall of 1864 John Cowan discovered gold in Last Chance gulch, 125 miles north of Virginia, and where Helena now stands, and other parties at Silver Bow and German gulches, west of the Rocky Mountains, at the head of Deer Lodge Valley. Last Chance and tributary gulches soon became almost world-famous for their richness. They have produced \$16,000,000, and are still profitably worked. Helena soon be-



BEAVER HEAD ROCK, SOUTHERN MONTANA.

came Montana's chief city, and in 1874 the Territorial capital was removed thither from Virginia City.

Subsequent discoveries are reliably recorded by Mr. W. A. Clark, a leading banker and mine owner of Montana, as follows: "The winter and spring succeeding the discoveries last named were noted for the finding of other auriferous gulches, notably the following: Confederate, eastwardly from Helena and beyond the Missouri river; Ophir gulch, west of the range and thirty miles from Helena, and likewise numerous small gulches contiguous to those named some of which were marvelously rich. In the fall of 1866 a four-mule team hauled to Benton for transportation down the river, two and one-half tons of gold, worth one and one-half millions of dollars, nearly all of which was taken out at Montana bar and vicinity near Confederate gulch.

"The spring of 1865 opened propitiously. Mines of great richness had been found extending throughout a region 150

miles in length and about one hundred miles in width, and immigration came pouring in from all directions. The year following was likewise important in discovery and actual operations. Elk creek, Bear, Lincoln and Highland gulches in Deer Lodge county, New York gulch and Montana bar in Meagher county, began their contributions to the mint. In 1869 the auriferous belt was further extended by the discovery of Cedar creek, a rich mining region in the Cœur d'Alene mountains in Missoula county, 175 miles westward from Helena, and at Nine Mile, in the same county, diggings of considerable promise were found in 1874.

"In all there are about five hundred gold-bearing gulches in Montana, varying from half a mile to twenty miles in length, besides numerous bars, and in nearly all of them mining operations are actively carried on during six or seven months of the year. The gold varies in size from microscopic powder to nuggets weighing forty and fifty ounces, and in quality from 600 to 990 in fineness. One nugget was found in a tributary of Snow Shoe gulch in 1865 which weighed 178 ounces troy, and was worth \$3,200."

In July, 1865, another large gold nugget was found in the claim of Maxwell Rollins & Co., in Nelson gulch, worth \$2,073. Deitrick & Brother found one on their claim in Rocker gulch, 1867, worth \$1,800. Three others were found on Scratch Gravel—one by a boy, in 1875, worth \$475; and two by the owner of the placer, Captain Tandy, in 1875 and 1876, one worth \$375 and another worth \$550. Another in Nelson gulch by the owner of the mine, Mr. Rogers, in 1878, worth \$550.

Gold quartz was found first in Montana near Bannack, November 12th, 1862, the pioneer mine being called the Dacotah, and thenceforward gold quartz was sought and found in nearly all the placer districts. Galena lodes carrying silver were found at Argenta, in Southern Montana, in 1865. The Philipsburg silver mines were discovered the same year, and the silver-copper ores of Butte were first brought to general notice in 1875. Some 25,000 quartz claims have been recorded since the first discoveries of 1862, and this branch of mining has gradually gained upon that which first made Montana famous as a bullion producer, until in the past few years it has far outstripped the placer mining interest.

THE MONTANA CRISIS—RUFFIANISM, WHITE AND RED.

The work of the Vigilance Committee in Montana forms the most thrilling chapter in her history. In the wake of every gold "stampede" follow a horde of thieves, robbers, desperadoes, criminals of the worst class and refugees from justice. Too idle and thriftless to themselves to take up the pick, shovel and pan, they prey upon the honest miners and despoil them of their hard-won treasure. And Montana during the gold excitement of 1862-63 was no exception to the rule. Among the later arrivals were some desperadoes and outlaws from the mines west of the mountains. In this gang were Henry Plummer, afterward the sheriff, Charley Reeves, Moore and Skinner, who as soon as they got "the lay of the country" commenced their nefarious operations. These ruffians served as a nucleus around which the desperate and the dishonest gathered, and quickly organized themselves into a band, with captain, lieutenants, secretary, road agents, and "outsiders." They became the terror of the country. When the stampede to Alder gulch occurred in June, 1863, and the discovery was made of the rich placer diggings there, many of the dangerous classes were attracted thither. Between Bannack and Virginia a correspondence in cipher was constantly kept up. To such a system were things reduced, that horses, men and coaches were marked in some manner to designate them as fit objects for plunder.

The headquarters of the marauders was at Rattlesnake ranch, in the Upper Beaverhead country, and a favorite resort was Dempsey's Cottonwood ranch. The plan of operations of the road agents was to lie in wait at some secluded spot on the road for a coach, a party, or a single individual, of whom information was given by their confederates, and when near enough, would spring from their cover with leveled shot-guns with the command, "Halt! throw up your hands!" And while a part of the gang kept their victims covered others would "go through" their effects. A failure to comply with the order, or any hesitancy in obeying it, was sure to cause the death of the person so disobeying; and, indeed, if there was a probability that any information which a victim might communicate would result in danger to themselves, he was shot, on the principle that "dead men tell no tales."

By the discoveries of the bodies of the victims, the confessions of the murderers before execution and other information, it was found that one hundred and two people had within a few months been certainly killed by these miscreants in various places, and it was believed that many more had shared the same fate. The whole country became terrorized, and although many ranchmen and dwellers in the mining camps knew the road agents, they dared not expose them for fear their lives would pay the penalty.

Some action on the part of the honest portion of the community to check these wholesale murders and robberies and bring their perpetrators to justice became imperatively necessary. But what was to be done? It was four hundred miles to the nearest man who was authorized to administer an oath. Clearly no relief could be had from the law. The conclusion that something should be done was hastened by the murder and robbery of Lloyd Magruder and his party, the sum stolen being over \$14,000. They were murdered by a number of road agents whom they had unknowingly hired to drive their teams. Magruder was well known and very popular throughout the whole region. This culminating outrage of the desperadoes led to the formation of the Vigilance Committee late in the year 1863. Five men in Virginia City and one in Nevada took the initiative in the matter. Two days had not elapsed before their efforts were united, and when once a beginning had been made the ramifications of the league of protection and order extended in a week or two all over the Territory. From the 21st of December, 1863, to the 11th of January, 1864, twenty-four of the desperadoes, including the leaders, Henry Plummer and George Ives, were captured and hanged at various places. Every one confessed, or there was testimony to show that he had murdered one or more men. This vigorous action of the Vigilantes brought to an end the terrible deeds of blood and rapine of the road agents in Montana, and criminals of all classes and grades fled for their lives.

However, much lynch law is to be condemned where recourse may be had to courts of justice, no such condemnation can attach to the acts of the Montana Vigilantes, for without their vigorous and summary proceedings the region would soon have become a sink of iniquity, such as would have hor-

DEER LODGE CITY, MONTANA.



rified the whole country. The necessity which called the Vigilance Committee into existence has passed away; but they established for Montana the basis upon which her present prosperity and peacefulness rest.

Not only have the best of these heroic pioneers had to cope with superior numbers of renegade whites for the possession of the fairest and richest of all our territories, but until within the past two years they have had to dispute inch by inch at the muzzle of the red man's rifle for the land once rescued from ruffians of their own blood. Montana has, for ages, been the chosen home or hunting ground of the Blackfeet, the Sioux, the Crows, Bannacks, Piegans, Bloods and many other formidable tribes. Most of these have, at some time, tried their native cunning and warlike propensities with the finer courage of the whites, and some of them have, until within the past few years, kept up a devastating and bitter fight for the region they had once sold but could not, after all, peacefully surrender. These tribes have always contended that Montana is the most beautiful region in all America, the most favored for game and fish, and the natural home of the buffalo, elk, antelope and deer. The Crows say, beautifully, "The Great Spirit only looks at other countries in summer, but here he lives all the year." Another tribe has a tradition which says that this country is nearest the "happy hunting ground," and that the warrior who falls here is particularly favored, because he makes only one short step from the old scenes to the enchanting new.

It has been this tenacity of red possession of the soil more than anything else that has been accountable for the long deferring of development of such a magnificent region as Montana. Men would risk almost anything for the fabulous wealth of gulches just described, but it becomes a different matter when the more peaceful occupations of the stockman and farmer were thus interfered with. Settlements were necessarily scattered and small, and the marauding Sioux or Crow could drop in upon them from favored coverts a day's ride distant, destroy or steal the accumulation of years, if not massacre the defenseless family. All this developed in Montana a class of Mountaineers who, for years, have pretty effectually held their own amid a foe many times their superior in numbers. They are "men of iron," our ideal unconquer-

able pioneers, but merely "holding their own" was a slow tread for glorious Montana in her race with less bountifully endowed but more peacefully situated sisters. It remained for our regular army to step in and clear such splendid regions as those drained by the Yellowstone, Big Horn, Upper Missouri, Musselshell and other rivers of an enemy too lazy to utilize any form of natural wealth, and too despicably jealous and mean to permit others to utilize it. And here I wish to say that Montana owes more to the regular army than any other of our newly rising states and territories, except, perhaps, Arizona. She can point to more distinguished Indian fighters than any other state or territory, or, perhaps, than all others combined. Within her borders many of the officers, whose names have since become historical, learned their first lessons in the art of dealing with the savage red man, in peace and in war, or added fresh laurels to those already won.

Every river, every mountain range recalls to mind the achievements in battle or in administration of Sheridan, Crook, Terry, Custer, Mackenzie, Gibbon, Miles, Sturges,—among the older officers, or lately of Philo Clarke and Guido Ilges among the juniors. These have all been great men;—great in genius, in valor, in heroic devotion to duty under the most adverse circumstances, and in their determination to bring to the fullest development the resources of a grand region of country, known until within the past few years only to a small band of miners and frontiersmen, leading an existence almost as wild and romantic as that of the red man or the bison whose possession of this fair land they disputed.

The writer was, during the trying days of 1876-7, the representative of an Eastern journal and attached to the expeditions which Brig.-Gen. George Crook led against the hostile Sioux and Cheyennes, then commanded by "Crazy Horse," "Sitting Bull," "Dull Knife" and "Little Wolf." He feels that within the limits of this little work he has neither space nor the proper opportunity to describe at length the fearful severity of those campaigns or to pay tribute to the gallant soldier who so ably led them. But, as General Crook had with him, during both summer and winter, a company of picked Montana marksmen, miners and prospectors—"old seeds" who would just as soon go into a fight with Indians as eat their breakfast, and as they and their numerous friends in

Helena, Bozeman and along the Yellowstone, will naturally feel a pleasure in some reference to the great campaigns in which they played their part so nobly, I deem it not altogether amiss to indulge in these few remarks, confident that they at least will peruse them with interest.

Rough as they were in garb, rough and uncouth perhaps at times in speech, they had the gentle hearts of women and were always ready to share their last crust or to take the post of danger. I saw much of them in the Spring (?) campaign of February, March and April, 1876, when they were formed into a company with the half-breed Indian scouts under Frank Guard and Ben Clark, the whole organization under Colonel Stanton, a gallant officer of the Regular Army. Why this was called the "Spring" campaign, I never could find out; probably, because the mercury was frozen in the bulb or the snow blew in our faces, borne on the bosom of screeching blizzards. But, spring or no spring, it was a campaign whose severity can never be fully known, except to those who participated in it.

That it was not a complete success was no fault of Crook's, but due to the incompetency or something worse, of certain subordinates, who were afterwards brought to trial for "misbehavior in presence of the enemy" and severely punished. In this campaign, we were obliged to go without clothing or bedding, save such as we carried on our backs and without food except the scantiest allowance possible of bacon and coffee. In this one point, Crook is without a rival in the Regular Army; he subjects himself to just the same discomfort and hardships as his men have to endure and cuts loose from his wagon train for weeks and months at a time. His wagons are never allowed to become receptacles of luxuries and toothsome delicacies for himself and officers; they carry only grain, ammunition and the necessary articles of daily food.

At the engagement on the Rosebud, Montana, June 17th, 1876, "Crazy Horse" and "Sitting Bull" "bounced" Crook with a force of painted and feathered red devils numbering well up in the thousands. Poor Custer met his fate at the hands of these same warriors only a week later. Crook's forces were not much, if any, superior to Custer's whole command, but he was fortunate in keeping them undivided. He withstood the attack with great skill and courage, altho' for a



THE THREE TETONS, NEAR THE SOUTHERN MONTANA BOUNDARY.—*Thos. Moran.*

while things certainly looked very blue. On this day, a little company of Montana miners, who had been out in the Black Hills prospecting and had joined Crook while on their way back to Montana, did splendid work with their Sharp's sporting rifles. I would like to describe at length how Crook and Terry, those grand soldiers after poor Custer's command had been wiped out, united their forces on the Yellowstone; how Terry then took for his share the task of cleaning out any hostiles to be found north of the Yellowstone, while Crook, like a bull-dog, hung to the trail which led to the south; how he followed it without bedding, without shelter, without food other than horse-meat and berries found in captured villages,—and in spite of the pitiless rain which beat down upon us, (for I was one of those who “Camped on the Trail,”) day after day, during the entire march from the mouth of Powder river to the Black Hills.

I could write a book about our trials and tribulations on those marches, and sometime in the future the half-formed fancy of the present moment may take shape. One thing I wish to impress upon the minds of present and future Montanians, and that is the fact that the campaigns of General Crook and brother officers and men in 1876 and 1877 had the positive result of opening to their permanent occupation and use those vast and beautiful regions drained by the Yellowstone, Big Horn, Tongue, Powder, Musselshell and Judith Rivers—regions which up to that time had swarmed with the most powerful, vindictive and treacherous tribes of savages America has produced. I went into those campaigns knowing little of the Regular Army, and indeed somewhat prejudiced against it; I came out, satisfied that, while there are many “bummers” upon its rolls,—men who disgrace the uniform they wear,—the mass of its officers, the “youngsters” especially, are brave, intelligent, patriotic, ambitious and courteous,—men of whom any country should be proud.

Closing this garrulous reminiscence of an arduous season of toil and danger, I am glad to say that among the lieutenants with whom I faced the red foe, and for whom I formed a great attachment, was the witty, bright and brave Schwatka, whose successes as an Arctic explorer have since made him world famous; Bourke, who besides being an officer of exceptional gallantry and good judgment, has devoted himself,

with great patience, to the collection of memoranda upon the manners and customs of the aborigines; Carpenter, noted as an entomologist, and dozens of other officers—Eagan, Charles King, Schuyler, Allison, Chase, Lemly, McKinney (since killed), or Delaney, Randall, Sibley, Nickerson, Henry, as brave and intelligent as any men can be—in the army or out of it.

And as Sherman's army had an important element following and surrounding it—"the bummers"—so this hard-worked force that Crook commanded had attached to it, a force of correspondents whom I compare, and in all kindness, to the "bummers" whom Sherman led to the sea. They were an exceptionable fine lot of men. There was Jack Finerty, of the *Chicago Times*. I have always had a notion that he stepped out from some place in Lever's novels; he was brave to rashness, and devoted to the interests of his great journal. Joe Wason, of the *Alta California* and the *New York Tribune*, always on the skirmish line after "pints." His red head shone like the danger signal of a freight train, but in spite of his red head he was one of the best fellows I ever knew. T. C. MacMillan, of the *Chicago Inter-Ocean*, and J. J. Roche, of the *New York Herald*, both physically weak, but, intellectually, strong, and so on through the list. Readers of the *Boston Advertiser*, *New York Herald and Tribune*, *Alta California*, *Philadelphia Press*, *Washington Star*, *Denver News*, *Omaha Republican and Herald*, *Cheyenne Sun*, and other papers represented at various times during that campaign of seventeen months' duration, never imagined while they were reading our letters at their comfortable breakfast table, and growling at the dashed correspondents because they "didn't make 'em more full," that the "dashed correspondent," dressed in rags, soaked through with rain, and almost crazed with want of food and rest, was writing his letters on a cottonwood chip or a piece of flat stone, and often at the risk of his life from a stray bullet.

LIFE IN MONTANA THEN AND NOW.

To most of those who went to Montana in 1863-'4-'5 and '6, there never came a thought of the Rocky Mountains as a place of permanent residence; they were there merely to get a fortune, and return to "the States," of which they always

spoke as home. The Pacific Railroad was as yet a scheme whose successful execution was problematical. The nearest railroad station was in Nebraska, 1,700 miles away by the stage route—16 days and nights of continuous stage-coach travel in the best of weather and under the most favorable circumstances, and Providence only knew how many days and nights in bad weather, and often with a chance for a skirmish with Indians, and a prospect of a massacre of the passengers, and a bonfire of the coach and all its contents. Regular fare was \$350 each way, meals extra at from \$1 to \$2 each, and such as east of the Missouri would have been counted dear at one-tenth the money. Only twenty-five pounds of baggage was allowed free, and all excess carefully weighed and charged for at *regular express rates* of \$2 a pound. Merchants received one stock of goods a year, hauled in wagons a whole spring, summer and autumn, and often half a winter's journey, at a freight charge of 25 cents a pound, and customers often paid \$1 a pound for flour, sugar, coffee, nails, candles and such luxuries as dried apples, \$10 a gallon for kerosene, \$5 apiece for brooms, 75 cents a paper for tacks, \$1 a yard for calico, and other things in proportion.

With the completion of the Pacific Railroad all these conditions speedily changed. Travel became as safe, cheap, speedy and pleasant as it had been dangerous, dear, slow and exhaustingly wearisome, and the cost of living fell from one-third to one-quarter of what it had been. People began to think of making homes in the Rocky Mountains instead of merely camping there to dig gold, and to explore for fertile valleys and for such delights of the eye and feasts for the soul as the wonders of the Yellowstone and other unapproachable features of nature with which the vast region about the headwaters of the Missouri, Columbia and Colorado Rivers abounded. They soon began to boast of their glorious climate as one well worth living and dying in. They found many legitimate ways of "getting on in the world," and it soon came to pass that a true Montanian would not for an instant think of dividing his love for the new home by declaring the least fealty to the old one. I doubt if there is a region on earth to-day, to which its inhabitants are so unswervingly and patriotically devoted as Montana. To-day the Montanian can board the palatial Pullman car of the Utah & Northern Branch of the



REPRESENTATIVE PUBLIC BUILDINGS IN MONTANA.

Union Pacific Railway, go from his home to Chicago in four days, or New York in five and a half. He can secure his mail and the luxuries of distant worlds in the same time, where, in the early days they were weeks or months en route. In fact, he scorns the once trite imputation, "out of the world."

I fancy that the average new-comer will have many preconceived notions concerning Montana society, schools and religious privileges happily dissipated. There were times in those young days of '62, when life was much here, as they tell us it was in California's Eldorado in '48. Ragged romance, bloody brutality, crime, greed, innocence, learning, all flocked to Montana's Alder Gulch. White hands browned and blistered in the sun, the air was filled with blasphemy in divers tongues, men died clutching the gold they had sold their lives for, the fashion of a woman's face was forgotten, and few spots on earth held so much riches and sin as Virginia. But matters are much changed now. Having scarred and scared our common mother's face almost out of all likeness to its former self, the yellow-stained army that could well be spared, left the poor dame to recover as best she could. For some time she lay in a stupor occasioned by this rough usage. Then gentler hands came to help, the wounds were bound up, and now she laughs among the wheat fields, buzzes among the saw-mills, and freely metes out her hidden wealth to the thousands who ask her honestly. There are churches where there were camps, schools where there were bars, matronly wives and handsome daughters, where the voice of woman was never heard.

There is probably less of the real frontier element in society in Montana than anywhere in the Rocky Mountain country. The roughest prospector of to-day is of an honest and manly race, leading a life which brings out many good qualities, and above all others, that of hospitality. No people on earth will extend a heartier welcome to the deserving "stranger in a strange land," than Montanians. No people are more settled or in love with home, or read more. The latter facts can best be appreciated when it is stated, that over 500 different periodicals are taken through the Post-office at Deer Lodge, a village of less than 1,000 inhabitants, and that every country town and mining-camp has its well selected libraries. Few communities are so lavish in their expenditures to secure

the best class of religious, educational and beneficent institutions. The report of the United States Commissioner of Education shows that only six States and none of the Territories excel Montana in the amount of money raised per capita for educational purposes. The spectacle of people taxing themselves for the support of schools, while dwelling in log huts and struggling with the vicissitudes of pioneer life, is potent with inspiration and hope for the future. There are in the Territory 100 public school-houses, costing \$100,000, and these are supplemented by an excellent college and several sectarian institutions, offering the usual advantages for instruction in the higher branches. All religious denominations are represented, their churches, thirty in number, costing a total of \$200,000. Secret and benevolent societies are found in all the cities and mining-camps. The Masonic and Odd-Fellows' societies have erected several fine temples, which cost from \$20,000 to \$35,000 each.

"There is no doubt," says an observer, not unknown to fame, "that Montana is that kind of a country which becomes the home of true men and noble women. Boys and girls brought up in a country like Montana, never lack in the energy, courage, patriotism and intelligence necessary to make a free people. Duty, discipline and industry become second nature to people in such a country, and in the days to come, the northern tier of States west of the Great Plains, are going to excel those States down in the semi-tropic region in men, as much as Massachusetts and Illinois excel Florida. Now is the time for capitalists and home-seekers to step in and share the bounties of such an empire of wealth, health and beauty."

LOCATION, EXTENT AND DEVELOPMENT.

Portions of Montana have been successively included within the boundary lines of Oregon, Washington, Nebraska, Dakota and Idaho Territories, until May 16th, 1864, a bill was passed establishing the Territory out of the northwestern part of Idaho. As now constituted Montana covers all that vast region lying between the 45th and 49th parallels of north latitude, and the 104th and 116th meridian of west longitude, extending 550 miles from east to west, and nearly 300 north to south—a total area of about 150,000 square miles, or nearly 100,000,000 acres. We can more fully appreciate the meaning of these figures when we remember that the six New England

States and the great state of New York would not cover this area, that Minnesota and Iowa could be turned over upon it and a margin left for Connecticut to rest upon, or that England and Wales, Ireland and Scotland combined do not near equal it in size.

How ridiculous would seem a comparison of the resources of any of our older or larger States with those of Montana. This magnificent empire of the new Northwest contains 16,000,000 acres of fertile farm lands, a more extensive area than is covered by a entire average Eastern State. It contains 38,000,000 acres of unexcelled grazing lands, a pasture-field alone larger than the great prairie State of Illinois. Its surface is underlaid with stratum after stratum of coal—largely embraced in the grazing and agricultural area already mentioned—amounts to 60,000 square miles, and would not only entirely cover the giant State of Pennsylvania, but would extend well over the boundaries of the commonwealths which encompass that greatest of all our eastern coal-mining regions. And then the Montana forests, 14,000,000 acres in extent, cover more territory than those of the noted lumbering State of Michigan, whose product in this line reaches the valuation of \$40,000,000 per annum. Of the mineral wealth of Montana the world knows more, for a region whose quartz veins and sluice-boxes have poured out \$164,000,000 in treasure in the first seventeen years of its settlement, under such discouragements as have fettered this Territory, cannot pass unnoticed. This seemingly boundless domain, with resources impossible to comprehend or calculate, does not occupy an unfavorable position on this globe of ours. The whole of England, Ireland, Scotland, Belgium, Holland, and some of the most beautiful and fertile portions of sunny France, lie north of the extreme northern boundary of Montana.

The population of the territory is 40,000; assessed valuation, \$18,609,802; average rate of taxation in the different counties, about 2 per cent; territorial indebtedness, \$61,891.00. The the people are well to do and pay cash as they go, as may be judged from their principal productions for 1880, namely: Agricultural productions, \$3,500,000; yield of mines, \$6,500,000; income from increase of live stock and exportation of same, with wool clip and hides, \$5,500,000; manufactured articles, including lumber, brick, mining and other machinery,

wagons, etc., \$2,000,000; total, \$17,000,000, or \$425 for every man, woman and child in the territory. The imports of merchandise and mining machinery, etc., by rail and river, in 1880, foot up about 50,000,000 pounds; the exports of ores, bullion, wool, hides, etc., about 18,000,000 pounds. Adding the tonnage of cattle exported, which were mostly driven to Cheyenne and other points on the Union Pacific Railway, and the exports for the year foot up nearly 40,000,000 pounds.

One railroad, the Utah and Northern Branch of the Union Pacific, stretches half way across Montana, entering from the South, via Ogden, Utah. It is being rapidly extended and will reach Butte by August, 1881. It already passes through, or within an easy day's stage or carriage ride, of all the best mining, agricultural and pastoral districts. It is affecting wonders in the way of developing Montana's great resources. The Northern Pacific Railroad, which has just entered Montana from the East, will probably be completed across the territory inside of three years. About 2,000 miles of the Missouri and Yellowstone Rivers, within Montana boundaries, are navigable six months each year, and afford cheap transportation east and to the sea. There were forty steamboat arrivals at Fort Benton last season, and thirty-four at Miles' City, on the Yellowstone. A fleet of twenty boats, costing altogether over \$500,000, and employing 500 men, are engaged in navigating Montana waters. Good stage roads render all the towns and settlements easily accessible from the Utah and Northern Branch of the Union Pacific Railway. For complete information concerning these the reader is referred to a chapter further on concerning routes and rates, distances, etc.

Following are some interesting facts concerning the population of Montana in 1880, as shown officially by census office reports. Last year immigration was very large, and it is believed the population of the Territory, January 1st, 1881, would not fall short of 45,000:

COUNTIES.	Total.....	Male.....	Females.....	Native.....	Foreign.....	White.....	Colored.....
The Territory.....	39,157	28,180	10,977	27,642	11,515	35,468	3,689
Beaverhead.....	2,712	2,044	668	1,886	826	2,574	138
Choteau.....	3,058	2,209	849	2,260	798	2,499	559
Custer.....	2,510	1,986	524	1,777	733	2,407	43
Dawson.....	180	147	33	148	32	168	12
Deer Lodge.....	8,876	6,674	2,202	5,379	3,497	8,065	811
Gallatin.....	3,043	2,405	1,238	3,120	523	3,501	52
Jefferson.....	2,464	1,823	641	1,781	680	2,389	75
Lewis and Clarke.....	6,521	4,458	2,063	4,460	2,061	5,711	810
Madison.....	3,016	2,065	1,251	2,800	1,026	3,622	294
Meagher.....	2,744	2,056	688	2,005	649	2,430	285
Missoula.....	2,531	1,713	820	1,843	689	1,923	610

RECAPITULATION.

Males.....	28,180	Foreign.....	11,515
Females.....	10,977	White.....	35,468
Native.....	27,642	Colored.....	3,689
Total population.....	39,157		



CAMP ON MYSTIC LAKE, MONTANA.

The assessment rolls by counties for 1877-'78-'79 and '80, and increase in 1880 over 1879, as given below are eloquent in expressing the constant and rapid increase in value of every portion of the Territory:

COUNTIES.	1877.	1878.	1879.	1880.	Increase in 1880 over 1879.
Beaverhead.....	\$843,182 00	8977,500 00	\$1,029,500 00	\$1,470,034 00	\$440,438 00
Choteau.....	545,850 00	595,722 00	1,179,638 00	1,542,773 00	363,135 00
Custer.....	296,435 00	329,231 02	355,030 00	496,573 00	141,543 00
Deer Lodge.....	1,906,044 00	2,508,958 00	3,591,555 00	4,539,500 00	738,931 00
Gallatin.....	1,190,000 00	1,386,340 00	1,661,030 00	1,955,220 00	294,190 00
Jefferson.....	664,901 00	755,663 15	843,682 75	1,061,465 00	157,782 25
Lewis & Clarke.....	2,787,540 00	2,916,255 00	3,040,235 00	3,354,325 00	314,090 00
Madison.....	1,631,010 00	1,790,662 00	1,885,179 00	2,014,158 00	128,979 00
Meagher.....	762,081 00	867,568 28	1,187,408 00	1,667,075 00	509,667 00
Missoula.....	596,771 00	647,189 00	755,507 00	747,673 00	12,166 00
Totals.....	\$11,193,874 00	\$12,777,028 45	\$15,598,880 75	\$18,069,802 00	\$2,470,921 25

Nothing will be more encouraging to the home-seeker and capitalist looking for a field for investment than the following exhibit of the territorial indebtedness, as shown by the auditors' books on the first day of each January since 1876:

1876.....	\$125,685 06	1879.....	\$87,390 10
1877.....	117,584 19	1880.....	61,891 09
1878.....	107,495 88		

The number of cattle, horses and sheep on the tax list, 1875 to 1880, shows a wonderfully rapid increase in stock-raising interests. Following is the statement compiled from the assessors' report:

Year.	Cattle.	Horses.	Sheep.
1875.....	144,411	25,340	20,790
1876.....	161,647	26,496	51,558
1877.....	182,659	33,413	79,288
1878.....	214,551	37,743	107,261
1879.....	263,788	44,416	168,891
1880.....	274,316	51,356	249,978

A statement of the Montana cattle and wool exports, 1875 to 1880, are also valuable as to some extent, showing what an amount of money is being handled by the comparatively small number of men (about 1,200) engaged in their production, when only ten years ago there were no sheep and but a few insignificant herds of cattle in the entire Territory:

Year.	Cattle Export.	Value.	Wool Export lbs.
1875.....	5,000	\$110,000	90,000
1876.....	6,000	132,000	257,800
1877.....	10,000	220,000	400,000
1878.....	22,000	440,000	800,000
1879.....	26,000	600,000	1,100,000
1880.....	30,000	750,000	1,300,000

According to the population, Montana is in the lead of all the Territories in her return of revenue to the parent govern-

ment. The collections noted in the following table are for the fiscal year ending June 30th, 1880:

<i>Territories.</i>	<i>Population.</i>	<i>Collections.</i>	<i>Per Capita.</i>
Utah.....	143,907	\$74,352.48	\$.52
Dakota.....	134,502	41,653.29	.31
New Mexico.....	118,430	31,850.93	.27
Washington ...	75,120	27,018.34	.36
Arizona	40,441	26,984.10	.67
Montana.....	39,157	33,714.17	.86
Idaho	32,611	22,665.54	.70
Wyoming... ..	20,788	15,947.95	.77

Montana, although younger than any of the other Territories, had, up to 1879, paid a total of \$732,394.68 into the internal revenue fund of the government, while Arizona had contributed but \$137,329.56; Dakota, \$108,976; Wyoming, \$112,655.09, and Utah, with a population four times as great, had, in twenty-eight years, paid a total \$100,000 less than Montana in fourteen years. The annual expense of governing the Territory, I am informed, is less than \$45,000, an amount which Montana has more than repaid each year. All the remaining territories and most of the states are on the other side of the ledger. As to the territory's credit and solid wealth, I will add that commercial agencies rate Montana business men as high as those of any section of our Union, and higher than those of most sections. The Comptroller of the Currency recently presented the the following under the head of banking in the territories:

Population.		No. of Banks.	Capital.		
1. Utah.....	143,907	1. Dakota.....	39	1. Montana.....	\$676,708
2. Dakota.....	134,502	2. Montana.....	15	2. Dakota.....	608,511
3. New Mexico.....	118,430	3. Utah.....	13	3. Utah.....	471,000
4. Washington.....	75,120	4. New Mexico.....	13	4. New Mexico.....	461,881
5. Arizona.....	40,441	5. Washington.....	8	5. Washington.....	437,000
6. Montana.....	39,157	6. Arizona.....	7	6. Wyoming.....	328,054
7. Idaho.....	32,611	7. Wyoming.....	7	7. Idaho.....	125,358
8. Wyoming.....	20,788	8. Idaho.....	4	8. Arizona.....	112,932

Deposit.	Average Deposit to each Inhabitant.		
1. Montana.....	\$2,000,894	1. Montana.....	\$51.33
2. Utah.....	1,849,825	2. Wyoming.....	39.48
3. Dakota.....	1,063,415	3. Utah.....	12.85
4. New Mexico.....	968,961	4. Dakota.....	12.59
5. Washington.....	825,000	5. Washington.....	10.98
6. Wyoming.....	828,818	6. New Mexico.....	8.19
7. Arizona.....	243,673	7. Arizona.....	6.02
8. Idaho.....	150,410	8. Idaho.....	4.89

From the above it will be seen that while Montana stands sixth in population it has more banks than any other Terri-

tory except Dakota, that its banks use more capital than those of any other Territory, and that its deposits excel those of any other Territory, being over \$2,000,000 as a whole, or \$53.33 for each inhabitant, while they are only \$11.60 for the other Ter-



GREAT FALLS OF THE MISSOURI, NORTHERN MONTANA.

ritories, ranging from \$4.89 per head in Idaho to \$39.41 in Wyoming. These deposits of Montana are \$160,000 more than those of Utah, with three and one-half times the number of people, and more than double those of New Mexico, with three times as many inhabitants.



CHAPTER II.

*TOPOGRAPHY—THE INDIAN'S "COUNTRY OF THE MOUNTAINS"—
RIVERS—VALLEYS—FORESTS, ETC.*

MONTANA'S name indicates its prevailing chorographic character and is simply a translation of the Indian name Tay-a-be-shock-up, or "Country of the Mountains." Indeed, one-fifth of the area of this vast Territory, or about 20,000,000 acres, is mountainous. While a few of the ranges are broken and grandly rugged, the majority consist of beautiful swells of no extreme height and presenting acclivities so gentle that natural roads run over them by easy grades at many points. Valley, bench and mountain often blend so evenly that it is difficult to tell just where the one ends and the other begins. The mountains are jeweled at all altitudes with copious springs, "clear and cold as crystal ice." Even the passes over the highest ranges in Montana usually have an altitude of only about 6,000 feet above sea level—no greater than the elevation of the plains at Cheyenne, Wyoming, and less than 1,000 feet greater than Denver, Colorado, a city surrounded by highly productive farms. Nearly all the arable Montana valleys average from 500 to 2,000 feet lower than the most fertile ones of Colorado or Utah. Montana's highest peak would hardly reach timber-line in Colorado, and her average mountains only reach heights which in the Centennial State are made to bloom and blossom as the rose. It is a land of gentle acclivities, over which you often pass without knowing when you are upon the summit. These gradual slopes and moderate altitudes greatly facilitate travel, development and commerce. Nearly all of the richest mines are easily approached by natural and ungraded roadways—an advantage found in few other mining regions in the world.

A consultation of the valuable tables compiled by Prof. Gannett, of the Hayden survey, discloses the fact that 51,600 square miles of Montana's area is less than 4,000 feet above the sea, while only 9,000 square miles of Colorado's area, and none of Utah's, is at a less altitude than 4,000 feet. Montana also possesses valley and bench lands covering an area of 40,-

700 square miles at a less altitude than 3,000 feet, while neither Colorado, New Mexico, Utah or Wyoming contain an acre of surface as low as 3,000 feet. Carrying this still further, we find that these official reports make the mean or average height of Montana above the sea 3,900 feet; that of Nevada, 5,600; of New Mexico, 5,660; of Wyoming, 6,400, and of Colorado, 7,000 feet—Montana possessing an average altitude above the sea of 2,260 feet less than the general average of those rich and thriving commonwealths.

These comparisons are worthy of study in connection with the climatic features of Montana, for it is patent that if its mountain ranges possess an altitude no greater than that of arable valleys in other Rocky Mountain regions, its climate in valley and mountain must be less rigorous than that of localities even further south. Following is a table of altitudes above sea level of prominent cities, towns, mountains, passes, rivers, lakes and valleys in Montana, compiled from the reports of Hayden and other explorers:

CITIES, TOWNS, MINING CAMPS, ETC.

Argenta.....	6,337	Fort Shaw.....	6,000
Beaver Head.....	4,464	Fish Creek Station.....	4,134
Big Horn City.....	2,831	Fort Ellis.....	4,035
Boetler's Ranch.....	4,873	Gallatin City.....	4,838
Bozeman.....	4,900	Helena.....	4,266
Butte.....	5,800	Hamilton.....	4,342
Bannack.....	5,896	Jefferson.....	4,776
Beavertown.....	4,942	Lovell's.....	5,465
Blackfoot Agency.....	3,169	Montana City.....	4,191
Boulder.....	5,000	Missoula.....	3,900
Brewer's Springs.....	4,957	Nevada City.....	5,548
Camp Baker.....	4,538	Sheridan.....	5,221
Carroll.....	2,247	Salisbury.....	4,838
Deer Lodge.....	4,546	Virginia City.....	2,824
Fort Benton.....	2,780	Whitehall.....	4,639

MOUNTAINS AND PASSES.

Bridger's Peak.....	9,002	Mt. Delano.....	10,200
Bridgers' Pass.....	6,147	Mt. Powell.....	10,500
Cloud Cone.....	7,300	McCloud Peak.....	7,500
Cadotte's Pass.....	6,044	Mullen's Pass.....	5,980
Deer Lodge Pass.....	5,808	Madison Pass.....	6,911
Emigrant Peak.....	10,629	Mt. Cowan.....	10,351
Electric Peak.....	10,992	Mt. Ellis.....	8,419
Engle Peak.....	7,500	Old Baldy.....	9,711
Flathead Pass.....	6,769	Pleasant Valley Pass.....	6,030
Kishnehnna Peak.....	8,574	Skiotah Peak.....	7,200
Lewis and Clarke Peak.....	6,323	Sphinx.....	10,880
Liberty Peak.....	9,162	Three Buttes (highest).....	6,700
Little Blackfoot Peak.....	6,250	Wedge Mountain.....	10,342
Mt. Blackmore.....	10,134	Ward's Peak.....	10,371

LAKES, RIVERS AND VALLEYS.

Flathead Lake	2,800
Red Rock Lake.....	6,500
Big Hole River—mouth of Camp Creek.....	5,135
Bitter Root River—Missoula.....	3,800
Jefferson River—mouth of Beaverhead.....	4,888
Madison—opposite Virginia City.....	5,026
Gallatin—20 miles above mouth.....	4,493
Gallatin—at mouth.....	4,100
Missouri—mouth of Sun River	3,573
Missouri—Fort Benton.....	2,664
Yellowstone River at Lake.....	7,788
Yellowstone River at mouth of Big Horn	2,831
Big Horn River, exit from Big Horn Mountains.....	3,534
Sun River, near Fort Shaw.....	5,900

The main range of the Rockies, the Bitter Root and Cœur D'Alene, in the western portion of the Territory, and the Belt, Highwood, Snow, Judith, Tobacco Root and Bridger ranges, in the southern and central portions—nearly all extending in a general north and south direction—are Montana's principal "water-sheds." For convenience in description the Territory is popularly divided into five large basins, four lying east of the Rocky Mountains and one to the westward. These basins are broken into large numbers of minor valleys separated and sheltered by spurs projecting from the main mountain ranges. All may be said to have their own peculiar river system—as complete and grand as those of any first-class State—and though generally divided from each other by mountain ranges are, as already indicated, easily accessible by good wagon roads over low passes. The entire region, a most harmonious blending of mountain and valley, lake and river, presents a physical grandeur and excellence scarcely equalled on the globe. Verily, as a resident expresses it, "Montana was molded in the heroic style of terrestrial architecture. Her cloud-piercing mountains, in which lie buried the wealth of nations; her unrivaled scenery, which can charm the painter's eye; her magnificent rivers, upon which can be borne the commerce of a world; her extensive plains, upon which may feed and fatten countless herds; her fertile valleys, that would yield wealth and happiness to thousands of homes; her mild and salubrious climate—all go to prove this."

THE SOURCE OF OUR GREATEST RIVERS.

Montana undoubtedly presents the finest river system in America, and, therefore, in the world. Here, almost within stone's throw, are the founts of the two great rivers of our

continent that finally flow into either ocean, the one, with its tributaries, possessing 2,000 miles of navigable waters within Montana's boundaries. Northward for 300 miles, and then eastward, through peaceful valleys, the fairest of all Montana landscapes, through occasional mountain gorges, not surpassed in grandeur in the world, now thundering over dizzy precipices and again almost losing its identity, in unruffled lakes.



SWAN LAKE AND RED BUTTE,

[Along the Union Pacific Route to Montana]

pours the mighty Missouri. Eastward from the nation's wonderland and pleasure-ground, and across the southern portion of the Territory, claiming features none the less majestic, and even more picturesque than the first named, is the beautiful Yellowstone. Northward and southward from points not many miles distant, and wandering in diverse ways for a thousand miles, only to meet again near the western sea, flow

the Hellgate and the Snake, the two great forks of the Columbia.

Aside from the Missouri, Yellowstone and Upper Columbia—each possessing thrice the volume of the Ohio at Pittsburg are a dozen so large and beautiful that we pause and wonder whence they come, and that the world knows so little of their manifold attractions. Among these I may name the Jefferson, Gallatin, Madison, Musselshell, Bitter Root, Sun, Milk, Hellgate, Beaverhead and Flathead. Adding to these the almost numberless laterals which course and beautify every ravine and valley, we find here unlimited water-power and inexhaustible supplies of water for irrigation. These bounteous waters, clear as crystal, and flowing over gravelly beds, are everywhere full of either mountain or salmon trout and other fish.

A LAND OF FERTILE VALLEYS.

The valleys drained and nourished by these numerous streams are wider, more extensive, and possess a lower average altitude—therefore a more genial climate—than any in the Rocky Mountain chain north of New Mexico, excepting alone the valley of the Great Salt Lake. They are unsurpassed for fertility, and are generally sheltered and rendered extremely picturesque by overlooking pine-covered mountain ranges. They are rarely more than a dozen miles wide, but it is estimated that if the arable lands of the principal ones alone were placed in a continuous body they would form a belt 4,000 miles long, averaging four miles in width—a belt of country unexcelled for fertility, which would stretch across our prairies, plains and mountains from Boston to San Francisco. Flanking these valleys, and often extending to the summits of adjacent mountains, are the almost illimitable natural pasture lands, producing thick carpets of grasses, which cure as they grow and in winter furnish food as nutritious as oats.

The soils are largely the washes and wear of the great mountain ranges. For ages the valleys and plains have been gathering their present accumulation of valuable decomposed and pulverized organic matter, which is so largely drawn upon by vegetable growth. Those qualities which eastern farmers try to replace by plaster of paris, bone-dust, ashes, lime, etc., exist in lasting quantities in these alkaline earths.

This fact and the dry, pure atmosphere account for the great superiority in all elements of nutrition of far-western grasses, grains and vegetable products over those of the States.

Montana offers neither the illimitable and monotonous level prairies, which distinguish some Mississippi Valley states, the vast, impenetrable forests, which were encountered and struggled with for years away "down east," and in which a settler could hardly carve a home in one life-time, or the marshy lowlands of the Lake region, whose enervating atmosphere needs no mention here; but a charming alternation of wooded mountain and arable valley, of rolling upland pasturage and well-drained meadow, characterize the topography of the Territory.

FORESTS—"THE ODOROUS PINEXY WOODS."

About 13,000,000 acres of the mountain lands are covered with heavy forests, while probably the fringes of soft-wood timber skirting all of the streams—which here are never thought of as forests—would aggregate 1,000,000 acres additional of timber land. In the western portion of the Territory thousands of square miles of the roughest mountain country are covered with a heavy, even growth of pine, spruce, cedar and tamarac, while in the central and eastern sections, where the mountains are less rugged, these same varieties lend great beauty to the landscape by occurring in lesser breadths—often reminding us of groves set on grassy slopes by human hands. By a wise disposition in this matter, the heavier forests almost invariably occur on the finest mineral lands, where most needed. The lower country, exceptionally good for grazing and farming, though not always adjacent to timber, is close enough for practical needs.

Lumbermen recognize in these forests three distinct varieties of pine, these being familiarly known as "yellow," "black" and "bull." In the lower valleys, often many miles distant from other forests, are the fringes of cottonwood, water ash, willow and box elder, all growing large enough to answer for the unpretentious homes of the farmers and stock men, or for fuel. In the northwestern corner of the Territory we encounter a species of mountain mahogany which grows to a diameter from six to ten inches, and seems as fine-grained and heavy as the beautiful Honduras mahogany. To the best of my remembrance the tamarac of New York and other Eastern States

grows only in the lowlands and swamps, while here it is found high up in the loftiest mountains. The yellow pine, which is most commonly used here, takes a handsome finish, possesses much strength, and is so hard and pitchy that ordinary wear and weather have little effect upon it. It is the general utility lumber par excellence, and Montanians carve it into almost anything, from a stool to their most elaborate residences. Black pine and bull pine are more knotty, and are used for rough work of all kinds. Spruce is extensively used for scantlings and joists, and here approaches the oak for toughness and elasticity.

While Montana can offer no such prodigious wonders of the forest as California and other Pacific Coast sections, she boasts some of the most extensive forests of moderately large trees I have ever seen. In Missoula county you can ride for days at a time through yellow pine timber, in which trees stand within four or five feet of each other, many towering up seventy-five feet to the first limb, and being from three to five feet in diameter. The banner lumber district is along Hell Gate river, in the county named. Pine and cedar trees, six feet in diameter at the base and three hundred feet high, are not at all rare in that locality, and the spruce grows proportionately large.

There are some forty sawmills in Montana, turning out about 6,000,000 feet of lumber annually. The market for lumber, heretofore confined almost wholly to the mining camps and cities, with the mining interest sadly depressed for a series of years, these figures are hardly an indication of what lumbering in this rich northland will be in the near future. The railroads are just beginning to utilize the forests. Immense quartz mining enterprises are beginning to consume heavy lumber with great rapidity, while the cities which are being fostered by their lavish yields of gold and silver are also consuming different grades as never before.

Three or four of the most prominent towns of Montana have extensive planing mills, sash and blind factories, etc. Helena has three or four such establishments, which turn out every species of plain and ornamental wood-work needed in building the most elegant residences. One firm, besides their extensive factories at Helena, have four saw mills within eighteen miles of the city. Their sawmills cut nearly 30,000 feet



DISTANT VIEW OF LOGAN, UTAH.

[Along the Union Pacific Route to Montana.]

of lumber daily. A portion of their product is rapidly turned into dressed lumber, sash, doors, blinds, office furniture, concentrating machines, fanning mills, etc. There is also a factory which turns out some very pretty designs of furniture from native pine and cedar. A church of Virginia City is furnished with home-made cedar furniture, which is as handsome as worshippers could wish.

Average retail prices for lumber in the different Montana cities are about as follows: Rough lumber, \$20 to \$25 per 1,000 feet; dressed and matched flooring, \$40 to \$45; dressed finishing lumber, \$40; lath, \$7 per 1,000; shingles, \$4.50; good four-panel doors, from \$3.50 to \$5 each, according to size and finish; common sash, glazed and primed, \$3 to \$4.50 each; blinds, \$3 to \$4.50. Wholesale prices range from eight to ten

per cent less. In some localities, notably in Missoula county, the chopping and hauling of logs is done by contract. There the choppers receive \$1 per 1,000 feet for felling the trees and cutting them into suitable lengths, realizing about \$3 per day for their work. Then haulers deliver the logs at the mills at an average of \$3 per 1,000 feet. Sawyers are paid \$50 per month and board. Near Helena all work in the timber or at the mills is paid for by the day or month. Choppers get \$50 per month and board; firemen and yardmen, \$60 and board; sawyers, \$125 and board; rough hands, never less than \$50 and board. At the planing mills, journeymen get \$4 per day, and the foreman \$5 per day.



CHAPTER III.

THE MONTANA CLIMATE.

IT is very popular, though entirely mistaken notion, that the farther north we go the colder it grows. The altitude, the character of the surface, prevailing winds, nature of the soil, and many other conditions, give us entirely different climates on the same line of latitude. Observations and tests, followed through a long series of years, prove that the western coasts of the continent in the northern hemisphere are far warmer than the eastern. This is directly traceable to the influence of the atmospheric currents and the thermal currents of the great oceans in distributing the heat of the tropics to these shores. That great river of warmth, the equatorial or Japan current, pours the full force of its heated breath against the low coastline of Washington and Oregon, and inland over plains and mountain tops, even east of Montana's eastern border. Deer Lodge, Montana, possibly, will not be thought so far "out of the world" when readers stop to think that it is on the same parallel of latitude as beautiful Venice; or Montana's northern boundary be deemed so hopelessly near the arctic seas, when they consider that it has the same latitude as Paris, where all the fruits and cereals of the middle temperate zones of the earth reach their greatest perfection. I have a friend who a year or two ago jour-

neyed northward from Fort Benton 400 miles into the British Possessions. He not only found cattle subsisting winter and summer on the herbage of that entire region without shelter but found a comfortable habitation every night en route and fields of waving grain along Peace river at the furthestmost limits of his journey. The Missouri river is thoroughly open near Helena a month earlier each spring than at Omaha, 500 miles farther south, with almost unfailing regularity.

In writing of the Montana climate I of course refer to that offered by the inhabitable and settled valleys. In the mountains winter does often pinch very hard and snow falls to great depths—but of course such regions are only utilized for their mines and forests—and even then are no worse than the forests of Maine and Michigan. It is the glorious and almost continuous sunshine, which shall always be recognized as the greatest charm of the Montana climate. Records prove that in recent years there have been 254 days of perfect sunshine at Helena, while Boston averages only 191, and Buffalo and Chicago about 170 *fair* days. The meteorological register at Fort Benton, Montana, bearing upon this point particularly, shows an average during six years of 291 *fair days each year*—100 more than Boston boasts. Mercury has during the present winter of unprecedented severity fallen as low as 35 degrees below zero at Helena and Butte and at other more exposed points as low as 40. But the rarity and dryness of the atmosphere temper the cold so that one suffers vastly less than in damp regions of the east, showing a much higher range of temperature. The average annual temperature of Helena is about 44°, that of Deer Lodge 40° and of Virginia 40.7°. All these points are considerably elevated above most of the inhabited valleys and their temperature necessarily some lower. The temperature of the valleys will vary little from 48°. The fall of rain and melted snow averages about 23 inches annually. Irrigation is necessary to the successful production of crops in all the valleys. The general excellence of the Montana winter climate can best be judged from the fact that with one exception the lowest temperature recorded at Virginia City, for six years was 19° below zero and also from the fact that building operations go steadily forward every month of the year. Summers are never

sultry as experienced east of the Missouri and several blankets are necessary to comfortable repose every night.

A brief rainy season, occasionally almost doing away with the necessity for irrigation, usually occurs in June. The amount of moisture falling annually in Montana is about three fourths that which descends in Minnesota or one-half the amount which descends in the region bordering the great lakes.

THE GENIAL "CHINOOK."

A feature peculiar to Montana and other northwestern territories is the "chinook." During my recent winter's stay at Helena I made the acquaintance of this somewhat remarkable visitor, and must say, in common with residents, that it was a case of "love at first sight." On two occasions, when the snow was lying unusually deep on mountain and in valley, a strong blast—but one so balmy that it was a luxury to breathe—greeted us in the morning, and by nightfall almost every atom of snow in the valley was on the way to distant oceans. On another occasion I started from Helena in the morning in a sleigh for Deer Lodge, 40 miles away. The snow was eighteen inches deep and sleighing excellent, but the "chinook" soon greeted me from the west and by two o'clock in the afternoon I was floundering in water. Montana cattle men cannot be shaken in their faith in the "chinook" in the darkest hour. These warm winds seem to come direct from the heated currents of the Pacific, and thus the "chinook," so regularly on hand when most wanted, turns winter into summer at a moment's notice. Destructive storms are very rare in Montana.

AS A HEALTH RESORT.

Naturally all concede this a healthy region and such it indisputably is. Dr. J. J. Leiser, for many months county physician at Helena, says the deaths of residents for each 1,000 inhabitants during 1880, were twelve, and that "subtracting the deaths due to exposure and accidents to which miners and prospectors subject themselves; such due to the riotous living of herders and freighters, and we have left as deaths from natural causes, due to climate and locality, an extremely low mortality." The percentage of deaths to population throughout the Territory is only 0.90; in Colorado, 0.94; in Illinois,

THE "THREE FORKS," MADISON, GALLATIN AND JEFFERSON RIVERS.



1.33; in New York 1.58; and in Louisiana, 2.00. The physician just quoted says: "For latent or threatened consumption there is unimpeachable evidence in favor of Montana climate. The rector of St. Peters Church Helena, gives in his record of interments the cause of death, and in 26 cases, his whole service in the Territory, their was but one death by consumption. Malaria cannot exist here, even though men bring it implanted in every bone. Asthma or hay fever there is none, though some persons may confound advanced emphyzema with such. Mountain fever, one of the diseases peculiar to the Rockies, is only met with occasionally. It is dangerous only as it relapses into typhoid. Only the mountaineer is subject to it, and it seems generated by some element in the waters of the mountain streams. Rheumatism is the most frequent disease we have, and yet I am positive it is not more prevalent than it is in the Eastern States, and I think it is more susceptible to treatment. Those diseases that do reach us are less frequent than in most other localities wherein they exist and are almost without exception less virulent.

"We have little rain, and in consequence our atmosphere is very dry, as well as very light; a carcass in the street, instead of decomposing, aided by additional moisture absorbed from the atmosphere, gives up its own moisture rapidly and literally dries up, scarcely tainting the air at all. Thus we necessarily avoid the host of diseases of eastern cities, that are due to decaying vegetation and putrifying animal matter. Further, the air being very dry, we escape those bronchial disorders and lung troubles so prevalent in damp, wet countries peculiar to the Atlantic coast. We have excessive changes in temperature, but it is only necessary to remind one's readers that a dry air, however cold, is only bracing, and one never suffers any inconvenience to his organs of respiration. It seems to me quite plain that we escape more effectually the ravages of such diseases as are always lurking about one's lungs than do the inhabitants of any other section of our country. Besides, we are so lavishly provided by nature with nature's cures that we are almost tempted to court sickness that we may revel in the cures, which are pleasant as well as sure. We have immense springs on all sides—cold mineral springs, hot sulphur springs, hot soda springs, and others—all

in their intensest powers, and for all such ills that are chronic enough to transport to the realms of these potent medicants we can haughtily say: "Throw physic to the dogs!"

Indeed, every breath of the pure mountain air, winter or summer, perfumed with the odor of pine and spruce, is a conscious inhalation of new life and strength. There is, then, nothing in the Montana climate to deter any intelligent home-seeker north of the Mason and Dixon line from making himself even more comfortable the year round than has been his wont in the east. Surely, if other proof could be asked, it should suffice that over half a million cattle, horses and sheep roam winter and summer in their fatness on Montana's hills, unsheltered and unfed, save as they feed and shelter themselves on their more than ample pasturage.



CHAPTER IV.

MINERAL RESOURCES—MINES IN THE VICINITY OF BUTTE, HELENA PHILIPSBURG, GLENDALE, VIRGINIA CITY, ETC.

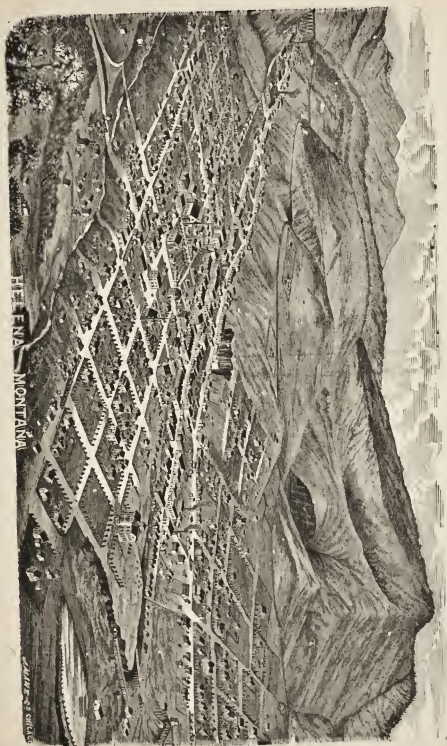
HERE the pen has its greatest temptation to run riot and if ever enthusiasm needs suppressing, it is while considering the present and future of this fascinating industry in Montana. Nine-tenths of Montana's aggregate gold yield, of over \$150,000,000, is credited to her 1000 gulch and placer claims. It required practically no capital to unearth this enormous mass of treasure. The civilization accompanying was often worse than barbarism, and few thought of calling Montana "home" ten years ago. The gulches steadily failed for ten years succeeding 1867 until it became a by-word that Montana would have to content herself for all time with the once attractive boast that her gulches had panned out \$85,000,000 in five consecutive years. True, a Montana miner occasionally turned from the sluice-box and made some such "strike" in quartz as the Atlantic cable, which yielded \$1000 per day for months at a time, the Whitelach-Union which produced \$3,500,000 in an incredibly short period, or the Penobscot, with its \$54,000 gold brick, a product of thirty days, all of which had the effect of calling in an occasional operator from the east whose ignorance or egotism, or both combined,

generally led to disaster and a consequent wholesale belaboring of the Territory as a mining field.

Until three years ago, 450 miles from the railroad, Montana's quartz needed to be pretty much all metal to pay. The coming, since then, of the Utah & Northern Branch of the Union Pacific has changed the whole face of the mining field as well as the agricultural. From the copper fields of the Musselshell on the east to the extreme western border of the Territory, 350 miles, and from the Bear Paw Range, near the British line at the north, to the Idaho line at the south, 300 miles, there is activity in every mountain range such as the frenzied gulch miner of 1862 could hardly have dreamed of. Contemporary with the earnest start hither of the railroad just noted, which gave assurance of quick and economical transportation of supplies, ore and bullion, were commenced such enterprises as that of the Alice, Lexington, Dexter, Original and other mining companies of Butte, the Hecla of Glendale, Alta-Montana of Wickes, and Hope and Algonquin of Philipsburg, each of which have extensive reduction works and have increased Montana's silver product from a little over \$1,000,000 in 1877 to \$3,500,000 in 1880. In fact, three-fourths of Montana's sixty-five successful stamp-mills, smelting works and crushers are the creation of the last four years, and the success of the Alice and Hecla alone has done more to attract the attention of the mining world than all the gulch mining operations of eighteen summers.

"QUARTZ IS KING."

Though still only in its infancy the quartz interest is indeed king. Some 25,000 claims have been recorded in the Territory, and the rapidly increasing importance of this class of mines can best be judged from their yield in recent years: In 1875 it was, in round numbers, \$2,200,000; in 1876, \$3,000,000; in 1877, \$3,200,000; in 1878, \$4,000,000; in 1879, \$4,500,000, and it is believed the footing of 1880 did not fall short of \$5,250,000. By far the most extensive developments have been made during the past summer—a number of mills and smelters having been erected whose product will not begin to figure until about the beginning of the spring of 1881—and if these enterprises are crowned with only ordinary success the bullion product should be nearly doubled this year.



HELENA MONTANA

W. H. & C. S. CHILDS

Montana's mountain ranges, hundreds in number, alternating with her valleys, exhibit a vast succession of croppings of not only gold and silver, but also copper, iron, coal, lead and other minerals. Among her hundreds of camps I know of none where her mineral is confined to one vast fissure like the Cornstock, in Nevada, or Homestake, in the Black Hills, but each has numerous veins of moderate dimensions whose wealth is in the reach of poor men or of those possessing a small amount of capital. Montana has never enjoyed a modern quartz-mining boom, and as its mineral field is larger than that of any other western State or Territory, it may be imagined that prospecting as well as developing has just begun.

Nature has been not a whit more lavish in her distribution of the thousands of veins of every conceivable character than in the facilities she has offered for development. The mines are all below "timber line"—a wagon can be driven to most of them without road-making—timber, water, coal and lime are abundant; the climate admits of working the year round, and the agricultural districts are so pleasingly sandwiched among the mining regions that supplies of fresh meats, vegetables, etc., can always be found in a day's wagon haul if farmers are alive to their splendid opportunities. Ore yielding from 20 to 60 per cent copper, deposits of iron assaying 25 to 80 per cent of that metal, and lead ores averaging 75 per cent are found in vast quantities—and about 60,000 square miles of Montana area are underlaid with coal.

THE MINES OF BUTTE

Butte is the pride of Montana, and, indeed, a youthful marvel in the mining world. It is situated in Silver Bow county, in the southwestern portion of the territory, and sixty-five miles north of the temporary or winter terminus of the Utah & Northern Branch of the Union Pacific, a line which will reach it by midsummer of 1881. Over 4,000 quartz mines have been located, some twenty quartz mills, smelters, roasters and arastras have been built and are turning out \$1,500,000 worth of silver bars yearly, and a handsome, solidly-built city of 5,000 inhabitants has appeared where four years ago was a collection of a dozen log huts, inhabited by a few miners who had not commenced to dream of the present prosperity.

Forty mines now from 100 to 700 feet deep, in a district three miles square, have paid from the grass roots down, fur-

nishing the only example, I believe, on record of a majority of prospects of one camp having paid for extensive developments or having been opened entirely by local capital. Some of the most important developments in progress in the entire Rocky Mountain country are going on at Butte just now with as little bluster as would accompany the opening of a coal measure in Pennsylvania.

The Alice Company, whose 20-stamp mill turned out \$450,000 in silver in 1880, decided some ten months ago that the extraordinary developments in the lower levels of the Alice mine would justify the constant operation of 80-stamps. The result is that a splendid new mill, the largest and most complete dry crushing works in the world, commenced dropping stamps in January, 1881. The new mill building measures 144x245 feet, containing sixty 825-pound stamps, two of Blake's largest rock breakers and two 60-inch Howell cylinder chloridizing furnaces—this and other ponderous machinery being operated by a 450-horse power Buekeye engine, and the mill complete costing about \$300,000. The mills and furnaces are greedy monsters, feeding not only upon eighty tons of ore daily, but devouring also every twelve months 3000 tons of salt worth \$200,000 and 100,000 pounds of quicksilver worth \$50,000, besides great quantities of fuel.

Over 6,000 tons of ore, averaging in value \$50 silver per ton, is lying in ore houses and on dumps awaiting the demands of this mill and eighty tons are raised from the mines daily. The old mill has crushed 16,000 tons of Alice ore in the last three years, worth on an average \$55 per ton. The two together have a capacity of eighty tons per day—an amount that can easily be doubled by the Alice should stopping be undertaken in good earnest, for no attempt has been made to extract the full width of the ledge on either of the five first levels.

The Alice property consists of 1,190 feet of the Alice lode, 1,200 feet of the Rooney, 984 feet of the Curry and 1,800 feet of the Magna Charta and Valdemere claims, all well defined fissure veins and occupying fifty-eight acres of ground. The Alice is a tremendous outcrop, thousands of tons of rich ore rising above the surface, and its workings now extending to a depth of 700 feet show the vein to be forty feet wide throughout the 1,000 feet thus far prospected at various depths along

it. It is generally believed at Butte that the Alice output for 1881 will not be less than \$1,700,000—exceeding the entire yield of the camp in 1880. The 100, 200, 300, 400, 500 and 700 foot levels are all being worked.

Steam pumps of a capacity of 2,000 gallons per minute, steam hoisting works of the most approved pattern, mills and grounds illuminated with 2,000 candle-power electric lights and steam fire pumps, and fire apparatus as complete as that of some cities, are other features about the Alice grounds which denote not only enterprise, but an excellent management of a wonderfully rich and extensive property. The \$1,000,000 produced by the Alice have not only justified such development, but have placed the ore-bodies in the best possible trim for a large and steady output. For the first ten days of February, 1881, the Alice company shipped twenty-eight bars of bullion worth a trifle over \$40,000. The Magna Charta and Valdemere claims are developed by an 1800 foot tunnel and cross-cutting at a depth of 200 feet shows an ore-body some thirty feet thick. The Alice company talks of building another large mill to work the ores of these two claims. The Alice is capitalized at \$10,000,000, in 400,000 shares of a par value of \$25 per share. Joseph R. Walker, Esq., of Salt Lake City, is president of the Alice Mining Company, Benjamin G. Raybould, Secretary, and Matthew K. Walker, Treasurer.

The Moulton mine, adjoining the Alice on the west, now operated by the recently organized Moulton Company, is also the scene of unusual activity these days. Contracts have been let for the sinking of a three-compartment shaft to the depth of 800 feet, 500 feet of which must be complete by the first of October, 1881. Fine steam hoisting works, a 40-stamp mill, and other improvements are in progress; all are to be completed within the time just specified. The outlay is over \$300,000. Two hundred and four tons of ore taken from the first 75 feet of one of the shafts yielded an average of \$107 per ton. As the Moulton claim leaves the Alice, several veins, each a good sized mine in itself, shoot out from the main vein. The main shaft was commenced to the north of the series, and with the regular pitch of the vein will strike the larger body between the 300 and 400 foot levels. At 157 feet deep, the first of the series was cut. It was then twenty-five inches in thick-



GATE OF THE MOUNTAINS, NEAR HELENA, M. T.

ness. This at the 200-foot station is fully four feet in thickness and the ore runs from \$76 to \$200 per ton.

Ten or a dozen openings, ranging in depth from 20 to 300 feet have been made along the vein, all going to show a practical continuation of the Alice. And, by the way, this wonderful fissure, undoubtedly the "mother vein" of the camp, is traced on its surface by rich croppings for over three miles.

It will sustain thousands of workers underground, and a flourishing city of 10,000 souls above, when reasonably developed, and it is only one of the fifteen or twenty thousand gold and silver veins already found in Montana.

Prof. Clayton, in his report on the Moulton, closes by saying: "Taken altogether, I have not seen a better prospect for a great mine or a safer investment in mining property, than that now presented in the Moulton patented mining claim."

The capital stock of the Moulton company is \$100,000, divided into 400,000 shares of the par value of \$25 each. William A. Clark, Butte, Montana, President; Governor E. H. Murray, Salt Lake City, Vice-President, and Geo. F. Prescott, Salt Lake City, Secretary.

Across the gulch and in full view of the Alice, are the great hoisting works of the Lexington, just completed, and near the bottom of the long hill below, is the little 10-stamp Lexington mill, which in three years has ground out 200 tons of pure silver, say \$600,000 worth, paid for itself and the Lexington mine with ten other adjoining claims, and for a superb foundry and machine shop, besides leaving Judge A. J. Davis, the owner, a cash balance of \$200,000. There are six shafts in the Lexington mine from 50 to 200 feet deep, and at a depth of 70 feet a level of 1,000 feet in length shows a continuous ore body 10 to 20 feet wide. Every ton extracted is sent to the mill, and, including the large quantities of waste and low grade ore which would naturally be encountered in such an immense ledge, the entire 15,000 tons thus far raised have averaged about \$60 per ton. The total expense of mining, hauling and turning these ores into silver bars is only \$12 per ton. Above the 70-foot level are still about 5,000 tons of \$60 ore, and 1,000 tons of \$200 ore, but new worlds are to be conquered further down, and a shaft is now being sunk to a depth of 500 feet as fast as it can be done.

Over 700 feet of the vein of this remarkable mine will average 10 feet in width. A recent strike in the Lexington, at the depth of 100 feet was a 7-foot vein of ore, assaying \$300 to the ton, and a smaller vein, also quite recently unearthed, shows masses assaying \$5,000 to \$10,000 per ton. A large mill will probably be erected to work Lexington ores during 1881. No visitor should ever leave Butte without seeing this great mine, for be he novice or expert, he will leave acknowledging that he has strolled over, under and around a fortune whose gigantic dimensions can be calculated upon, even though it is underground. Divide your estimates by half, "on account of the lightness of the atmosphere," and you can demonstrate beyond a shadow of a doubt that there are \$2,000,000 in sight in the different claims on the Lexington.

Half a mile west of the Lexington is the Anselmo, which has a two-foot vein that is steadily yielding ore worth \$200 to \$400 to the ton, and which is considered such an unusually good thing, that the gentleman who now works it under lease, has been offered \$40,000 bonus for the remaining eighteen months of his lease.

The Anselmo has \$50,000 worth of ore on the dump, to which \$2,000 was being added daily in February, 1881. Many masses of quartz literally sparkle with native silver and others are a perfect network of wire silver, assaying from \$5,000 to \$10,000 per ton, owned by poor men a few months ago, who hardly expected great riches, it could not be bought to-day for \$250,000.

A short walk from the Anselmo are the La Plata, Pacific, Josephine, and five other claims, all the property of the Silver Bow Company. That this company was incorporated some three or four years ago with a capital of \$50,000, and has since been working within its own means, and with the recent completion of its large reduction works has expended altogether at Butte a round half million dollars, is sufficient evidence of the wealth of its claims. Its output in 1880 amounted to about \$230,000. Ore from the La Plata has been shipped to Freiberg Germany, that yielded \$1,000 per ton, and the Gray Rock, also the property of the Silver Bow people, yielded \$100,000 in 1880. Steam hoisting works and pumps are to be placed in position on the Gray Rock at an early date. It shows an ore-body from eight to fifteen feet wide at a depth of seventy-two

feet, and twenty-three feet wide at a depth of ninety-two feet—all paying ore, and sufficiently explored to warrant the belief that this would be called a mammoth and rich property in any country.

The Original, National and Gagnon, all on the same lode, a vein that is being worked at intervals of a few hundred feet for two miles, and runs through the city proper, have proved veritable bonanzas. Gagnon ores have been noted as the richest sent out of the Territory, hundreds of tons having paid for a 400-mile wagon haul and a railroad ride of several thousand miles, and a profit of from \$100 to \$500 per ton besides. The mine has yielded \$1,500,000. The National, which has almost as good a reputation as any mine in camp, has just passed from private hands into those of an incorporated company, and new hoisting works, pumps, etc., are being built to sink a three-compartment shaft on it 1,000 feet. The Acquisition, on the same great vein, is also putting off its swaddling clothes, and will be at once developed to a great depth, by steam works now being erected. An ore chimney in this claim 130 feet long, 40 feet wide and 50 feet deep, has panned out \$150,000.

A portion of the Original has been incorporated with the Jasper claim, which adjoins it on the north. The capital stock of the Original Mining Company is \$500,000, and it starts out under bright auspices to develop a large and promising property. A shaft is to be sunk at once to a depth of 1,000 feet.

Many of the mines of Butte yield an important percentage of copper, that metal bearing pretty much the same relation to silver ore here that lead does in Utah and Colorado. Indeed, some claims, notably the Parrot and Colusa, have mammoth veins, carrying a higher valuation of copper than silver. The result is that a party of New York capitalists have recently erected very extensive works at Butte for the treatment of that class of ore, 3,000 tons of which they had previously shipped to Baltimore. The Colusa shows good bodies of ore running from 40 to 75 per cent copper; the Parrot doing nearly as well, and in addition furnishing from \$10 to \$50 in silver per ton. The capacity of the smelter is from thirty-five to forty tons per day, and the enterprise has proved so thoroughly successful that the works are now being enlarged to nearly double their former size. This success has also encouraged a company of

Boston capitalists to build similar works on about the same scale, the machinery for which is now being put in position. The New York Company has a reserve of 4,000 tons of ore on the dump of the Colusa, and vast quantities are exposed in the mine. The Boston people have an almost equally good showing at the Parrot. The output of copper from these works, according to the present results at the New York Company's smelter, will approximate 6,000 tons in 1881—a very large item in copper, that has hardly figured in Butte's metal production in the past, because freights consumed so large a proportion of the value of ore shipped East that only those of the highest grade could be handled. These two companies will employ directly and indirectly 500 men when improvements now under way are fully completed.

The Stevens, Belle, Star West, Hope, Salisbury, Ophir, Pacific, Fourth of July and other rich mines in the vicinity of Butte, deserve extended mention, but with a passing notice of the two first named, I must hurry to other fields. The Stevens is emphatically a poor man's mine, which has literally paid from the grass roots down. Three shafts, some fifty feet deep each, and numerous levels and drifts, disclose a crevice five feet wide, twenty inches of which is ore averaging \$90 per ton, and which has produced many thousands of dollars above all expenses. The product was about \$50,000 in 1880. The Stevens recently sold for \$35,000, and quartz men believe the purchase money will be extracted within six months from the time it changed hands. The Bell property, also recently organized into a stock company, is rich in silver-copper ore. The vein is from twenty to twenty-five feet wide in the lower workings (160 feet deep), and large and continuous ore bodies in this tremendous crevice assay from \$250 to \$500 per ton. One level is already 400 feet along this great vein. The production is now about \$3,000 worth of ore daily, and it is believed a 30-ton smelter could be kept running two years on the mineral now on the surface and in sight under ground.

These are a few of some forty paying mining enterprises at Butte. I will add that eight sets of first-class steam hoisting works and pumps for as many different mines, and half a dozen mills were built or enlarged during the last ninety days of 1880, doubling the bullion producing capacity of the camp

in that brief period. Six deep shafts from 200 to 800 feet each were contracted for and well started within about the same period. The cost of these leading improvements will not fall short of \$1,500,000, to say nothing of a large outlay going on in some twenty lesser mining enterprises. Butte's bullion production in 1880 was alone \$1,500,000. She can easily double it in 1881. Fifteen hundred men are employed in the district. It is reliably stated that mines like the Alice, Moulton, Lexington, Grey Rock, Magna Charta, Silversmith and others, as soon as developments contemplated are completed, will each employ from 100 to 500 workmen. Fully 4,000 workmen will be required within the next year to run the mines, mills and smelters of Butte. A dozen mills and smelting works are now in operation or nearly completed.

There is still a wide field for the profitable employment of capital. There are many undeveloped claims which have surface indications as good as were those of some of the bonanzas I have named. Pumping machinery and hoisting works are a necessity here when a claim has reached the depth of 75 or 100 feet. All owners cannot stand the large outlay necessary, but many are willing to sell at pretty reasonable figures, or give an interest in property to those who will put in the necessary machinery.

Butte is a lively little city of 5,000 souls, located 35 miles north of the present terminus of the Utah & Northern Railway, at the moderate altitude of 5,800 feet. Nearly 4,000 quartz claims have been located in the immediate vicinity, and 200 buildings were erected last year. On the first day of February, 1881, the clatter of hammer and saw and of a dozen mills and smelters went on as in spring time. The Utah & Northern Railway will be there in August, 1881, and stimulate development to a still greater degree. Butte receives extended notice elsewhere in this volume.

MINING DISTRICTS NEAR HELENA.

Helena is the center of many rich gold and silver districts. The mountains for forty miles in all directions are full of mines which have either been only slowly developed or entirely dormant for years on account of lack of transportation facilities. But a marked improvement is noticeable in several districts, and the year 1880 witnessed a wonderful stride on the part of

many mining enterprises. The mines about Helena embrace almost all varieties of gold, silver, copper, iron and lead ores, in veins or deposits at once large and rich, and they are numbered by thousands.

The Silver Creek district, 25 miles northwest of Helena, was one of the heaviest gold producers in the western country in 1880, and promises still better for 1881. The Penobscot of that district is one of the most noted mines in the Territory. Many readers already know how the patient, hard-working and finally fortunate Vestel here made his "stake" of \$500,000 in less than a year—the mine yielding over \$100,000 in the first 50 feet in a few months, and Mr. Vestel then selling out for \$400,000. The deepest point reached in this now famous lode is about 350 feet. Its product for 1879 was over \$200,000.

The Belmont, in the same district is not only one of the largest and best gold veins in Montana but also one of the best developed and most judiciously handled. The ore-body is from eight to twenty feet wide, and it is worked to a depth of nearly 600 feet. It yields over \$100,000 per annum, and this will be doubled in 1881 by the erection of an additional twenty-stamp mill. The present mill is handling 1,000 tons of Belmont ore per month, the total cost of mining and milling being \$5.50 per ton, and the average yield a little over \$10 per ton. Over 40,000 tons of ore are claimed to be in sight or attainable in the Belmont mine. The Whip-poor-will is an adjacent mine that is a heavy producer of free gold ore and is generally considered almost as good as the Belmont. The Blue-Bird, near by, has already yielded a fortune, and, with the Hickey, shows a continuous vein four to ten feet wide, and 3,000 feet long. These claims are opened 250 feet in depth. The Drum Lemond, in the same district, at its lowest depth shows a vein 40 feet wide of almost solid "pay quartz." The owner has recently refused \$250,000 for the property. The Gloster, near the last named, is a ten foot vein carrying free gold worth from \$20 to \$30 per ton, and upon whose immense reserves a fifty-stamp mill will soon regularly diet. These are only a few of the dozen or more phenomenally large veins in the Silver Creek district, and which will soon be adding millions annually to our bullion product. These ores average far richer than the free milling gold ores of the Black Hills, from which so many fortunes have been made and from

their prodigious quantity and character it would seem they should be mined and milled just as cheaply.

Within five miles of Helena the Black Alder, a gold lode, opened in 1878, makes a remarkably large display of ore which nets as high as \$25 per ton by the ordinary stamp mill process. This is in the vicinity of the famous Whitelash-Union which for several years has been resting on the laurels gained by a \$3,500,000 yield, but the cross-pulling of its owners will probably soon be over when it will wheel into line as a heavy producer. About eight miles south of Helena the Bonanza Chief, Star of Hope, Deer Lodge, Eureka and Legal Tender are all large veins, and would be classed bonanzas almost anywhere. A steam hoister is being erected on the Bonanza Chief, and a shaft of 250 feet will be sunk on the ore-body at once. This shaft is now down 100 feet from the surface and shows free milling gold ore, of about the same value as those of other mines described above. At the end of a 400 foot tunnel the vein is found to be fifty feet wide. Considering the enormous size of the vein, and the ease and economy with which the ore is reduced, this is certainly one of the greatest mines in Montana, or in the entire west for that matter. Mr. Cole Saunders who also organized the Alta-Montana and the Northwest Mining Companies, and has secured \$1,000,000 of Eastern capital to develop Montana mines, organized the Bonanza Chief Company, and has done much toward placing it upon a sound basis. A twenty-stamp mill is now at work on Bonanza Chief ore, and twenty more stamps have been ordered. The forty stamps will crush from 75 to 80 tons of ore per day, yielding \$10 to \$12 in gold per ton.

About five miles north of Helena, is the "Lexington" mine, a veritable curiosity in the mineral world. It has produced nearly every conceivable kind of silver, from the native metal down through all its various combinations. Out of less than 200 tons of ore-product, about \$30,000 were realized. A shipment of six tons yielded \$5,887.79, and one ton carried nearly \$6,000. The Ten Mile and Red Mountain districts, within two hours' drive of Helena, contain silver bearing lodes in great numbers, a few of which develop ores that pay well for shipment to foreign reduction works. The Garfield Mining and Milling Company owns several very valuable claims on Red Mountain.



VIRGINIA CITY, MONTANA.

The Silver King Mine is within six miles of Helena, on what is known as Clark's Creek, and shows some remarkably fine samples of ore. It is opened by a shaft 45 feet deep, and all the way down is ore, in a vein varying from 18 inches to 3 feet in width, one foot of which is a heavy green quartz that carries over \$300 in silver per ton. An assay of what is called the best grade yielded 360 ounces, and the poorest found in 18 inches of the vein at the bottom carried \$86 in silver per ton, besides, in one case, copper that amounted to 40 per cent.

The Mantle Mine, in Cataract district, has eight feet of \$100 ore. The Redemption Mine, in the same district, is also a very promising property and has recently incorporated and capitalized at \$2,000,000. Last Chance and its tributary gulches, in which Helena is built, have already yielded some \$16,000,000 in gold, almost without the application of capital, and mining still progresses among the lower streets, as well as in every nook and corner of the romantic gulches and mountains closely surrounding. These gulches have been usually productive the past year, yielding not far from \$500,000.

I doubt if there is a region of similar extent in the world that presents a larger number of great fissure veins, yielding fair grades of ore than those embraced by the districts near Helena above briefly touched; and there are numerous others almost equally important which lack of space forbids mentioning here. About 150 stamps are now in operation within 25 miles of Helena, and 205 more are to be set to work during 1881.

Naturally tributary to Helena are the Jefferson county mines, from twenty to thirty miles distant to the south and southeast, which in years past have yielded some \$6,000,000, and are credited with a yield of \$200,000 in 1878. Its mines carry both gold and silver, and are mainly found near Jefferson, Radersburg and Boulder. Among the cluster of mines near Radersburg are promising silver and copper veins, the "A. M. Holter" and the "Copper King" being worthy of special mention. The former carries a fine body of ore, assaying from \$40 away up to \$8,000 in silver per ton, while the latter is rich in sulphurets of copper, yielding from 40 to 60 per cent of pure copper. The ores of the principal leads of this district contain iron after a certain depth is reached, and for their successful reduction more elaborate works will have to be constructed. These will be added in the immediate

future, and the mines will again add largely to the gross gold product of the Territory. The gulch mines near Radersburg are very extensive, and have paid from \$10 to \$15 per day to the man the past season. Several mills are also crushing quartz from gold mines in this vicinity, and from all appearances are reaping a golden harvest. Clancy, eighteen miles south of Helena has been a lively silver mining camp in the past, and the future will doubtless see it more so.

WICKES AND VICINITY.

About 25 miles south of Helena is the silver-mining center of Wickes, in whose vicinity are four very promising mining districts, viz: Boulder, Cataract, Colorado and Vaughn. These districts contain a dozen or more mines whose present resources and systematic development justify placing them in the front rank among the very best properties in the west. The Alta-Montana Company, of New York city, has been fortunate in securing the best of these. The company owns the "Alta," "Alta South," "Custer," "North Pacific," and "Comet," altogether developed by 2,800 feet of tunnels and numerous shafts, drifts, etc. This property is mainly worked by tunnels and requires no expensive outlay for hoisting works and pumps. This company also owns five mining claims adjoining the above, with good showings, but undeveloped. The Alta vein averages from 4 to 12 feet in thickness, embracing galena, carbonates, and true silver ores, which assay from \$60 to \$140 per ton in silver, and 40 to 60 per cent lead. The ores now being treated from the Alta mine show an average assay value of \$90, the mine producing from 30 to 40 tons daily. The ore now uncovered and ready for extraction is estimated at 45,000 tons. The Company owns 5,700 feet on the Alta mine, opened at intervals by shafts and tunnels, the ores being carried down the mountain by a tramway. The Alta produces from \$50,000 to \$75,000 worth of ore per month. Following was its out-put during recent short periods: For December, 1880, ore 1,004,000 pounds; average value of silver per ton, \$122.72; total value of silver, \$61,605.44. Total amount of first-class ore worked from January 1st to 10th, 1881, inclusive, 318,000 pounds; average value of silver per ton, \$153.40; total amount of silver, \$24,380.60.

The Comet has a tunnel 650 feet in length, running on ore the entire distance. The vein carries argentiferous lead

ores in large bodies, the average width being about ten feet and the value 70 ounces silver per ton and 56 per cent. lead. A shaft has been sunk 80 feet below the present tunnel and complete steam hoisting and pumping machinery are in place. The mine is developed so as to furnish 50 tons of ore daily. During the past summer the Company erected complete concentrating works at the Comet mine of a daily capacity of 25 tons, so built as to be easily increased to 50 tons daily capacity. About 6,500 tons of low grade ores are now on the dump ready for concentration. The North Pacific, Custer and other claims owned by the Company add to form one of the greatest consolidations of mining property in the country.

The Alta-Montana Company have expended something like \$350,000 at Wickes, one mile from their mines, in the construction of the most extensive smelting works in Montana. They are calculated to treat all classes of silver-lead ore, and contain a splendid Krome concentrating mill, six reverberatory furnaces, two water-jacket smelting furnaces, one refining furnace, three Bruckner chloridizing cylinders, and, indeed, all appurtenances of a thoroughly complete and modern reduction works. The capacity is 1,000 tons per month, and improvements are constantly being added to increase this. There is an abundance of wood, iron ores and lime rock—all essential for successful and economical smelting—in the immediate vicinity of the works. As for silver ores the Alta and Comet mines are alone producing sufficient ore to supply the reduction works. The Alta-Montana Company has a capital stock of \$5,000,000, full paid and unassessable, divided into 50,000 shares of \$10 each. The officers are William W. Wickes, President and Managing Director; Michael Snow, Vice-President; Robt. F. Brooke, Secretary and Treasurer, and Horace F. Brown, Superintendent.

Besides the Alta-Montana Company's own mines there are a dozen or more in the vicinity which are being worked on an extensive scale on account of the ore market just created by the smelters and the rapid approach of the Utah & Northern Railway, which has largely cheapened the cost of developing mines in the last six months. Among these the Legal Tender is 450 feet deep, has 1,000 feet of levels and has produced \$350,000; the Rumley which has yielded in the neighborhood of a million and is a good mine yet; the Greg-

ory, which has 5,000 tons of ore on the dump and has recently been incorporated by Boston capitalists, who are building extensive concentrating works and steam hoisting works; the Little Jennie which now has 1,000 tons of second-class ore on the dump that will yield \$125 per ton; the famous Boulder gold mine, in which some 9,000 tons of paying ore is now exposed; the Mantle, whose rich gold quartz has yielded \$200 per ton by the wagon load. The Garfield, Minnesota, Dan Tucker, Eureka, Belle of Boulder, Nabob and others.

The Alta-Montana Company employs 250 men and its liberal investment of capital has set hundreds of others to work on good mines which were almost worthless until an ore market was created at home. It is estimated that this group of mines in the vicinity of Wickes will furnish the railroad a train-load of ore and base-bullion daily, when developments now under way are complete and the iron horse approaches to within a dozen miles. It is a class of mines which, from this on will give employment to thousands the year round.

Summing up the advantages and disadvantages of silver mining in these various camps within thirty miles of Helena Mr. Z. L. White, the able mining correspondent of the *New York Tribune*, says:

There are a great number of mines already developed within thirty miles of Helena which are capable of producing an enormous quantity of silver-lead ore, and there is every reason to believe that many other lodes will be discovered and opened as soon as there is a market for their ore.

The galena ores of these districts are not less rich or less easily mined and are no more difficult to treat than the ores in some of the districts of Colorado and Utah where mining has been made very profitable. There is, therefore, every reason to suppose that whenever capital can be induced to take hold of some of these mines, proper machinery is provided for treating the ores, and expert skill is employed, the mines I have described, and many others in the same districts, will yield large returns to their owners.

If the Alta-Montana Company's enterprise is successful other capitalists will probably be induced to invest in similar works.

In any event, the completion of the Utah and Northern branch of the Union Pacific Railway will make these mining districts more accessible than they have ever been before, will reduce the cost of all machinery by furnishing cheaper freights, and will probably make it easier to interest capitalists in all kinds of Montana enterprises which offer large returns for legitimate business investments.

SOUTHERN MONTANA MINES.

The mines of Beaver Head and Madison counties, in southern Montana, give promise of a future immediately brilliant, because of their nearness to the Utah & Northern branch of the Union Pacific Railway, which is now fairly among them. The advantage they possess because of their accessibility, and the ease and economy with which machinery and supplies can be transported to them, or ores carried out, are items which will enter largely into their future history. Both counties abound in rich mineral districts, the quartz mines of Beaver Head county, however, just at present attracting by far the larger share of attention. The first gold mining operations of note in Montana occurred in the fall of 1862, at Bannack, long the county seat of this county, and since then some \$4,500,000 worth of placer gold has been produced. There are seven organized mining districts within the bounds of Beaver Head. In these are some of the very best mines in the Territory, and a number which have yielded small quantities of fabulously rich gold ores. Deposits of iron, copper and coal are also reported in various sections.

The banner district of the county, so far as developed, is Bryant, in the northern portion, a section, which, perhaps, more than any other in Montana, has been benefitted by the recent coming of the iron horse. Nearly all the developed lodes belong to the Hecla Company, whose great smelting works enliven the pretty village of Glendale, ten miles below. The veins generally carry oxidized lead ore very rich in silver and are found to lie in a system of caves—these caves being connected by narrow ore bodies. The Cleve, Atlantis and True Fissure are the principal mines. They are operated by three sets of splendid steam hoisting works and several of the best steam drills. Their combined product of some 12,000 tons per annum averages 100 ounces silver per ton, fifteen per cent. copper and quite a respectable showing of lead.

The extent of the Hecla Company's mining operations can at least be partially realized from the fact that underground developments aggregate over five miles in length. The smelter, mill, assay office and ore houses, etc., cover five acres of ground, and form quite a village in themselves. These works have cost over \$500,000. The product, which is shipped in the form of base bullion, refined bullion and copper matte,

was \$100,000 in 1876, when only the nucleus of the present vast establishment was on the ground, \$200,000 in 1877, \$400,000 in 1878, and for the past two seasons the average has been a little above the yield of 1878. The company employs 300 men and is constantly increasing the capacity and efficiency of its works and enlarging the operations in the mines. It contributes about 5,000 tons of freight to the business of the Utah and Northern Railway each summer.

The Monroe, Pride of the West and Wall Street, are promising claims in Bryant District, being worked by the Monroe Silver Mining Company.

Six miles north of Bryant is Vipond District, where there are several well defined silver lodes. From these mines several hundred tons of ore recently yielded an average of \$200 to the ton. Three *arastras*, running on ore from different lodes in this district, are proving them worthy the attention of capital. Some twenty-five miles north of Bannack is Elkhorn silver district, in which the "Storm" is a local bonanza, carrying a 10-foot vein of ore, which is said to average \$50 to the ton. The operations of a six-stamp mill for two months here resulted in a yield of \$7,000. Three miles east of Bannack is Blue Wing District, and fifteen miles northeast, Argenta District, both showing some exceptionally fine silver ores. In Blue Wing District the Silver Rose is six feet wide and is producing ore in car load lots worth \$50 to \$120 per ton. The Erie and Blue Wing are also large veins, producing respectable quantities of high grade ore worth \$300 to \$400 per ton. The New Departure mine ships ore worth \$600 per ton and is vigorously developed. In Argenta District a blast furnace has, during two recent seasons, turned out \$100,000 worth of bullion. The Legal Tender mine in Argenta District is producing ore worth \$300 per ton and its owner contentedly takes out about \$150 worth daily without being subject to the expense and annoyance of running a mine on a large scale. The Florida, St. Joe, Woolly and Paymaster, in the same district, are being vigorously developed and yielding handsomely.

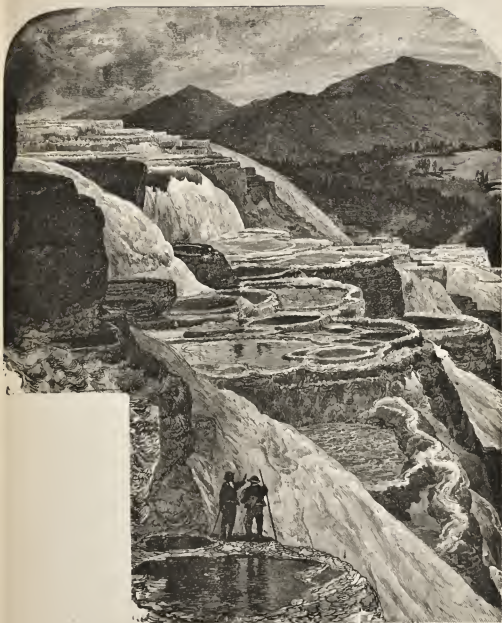
The gold quartz mines in the vicinity of Bannack have been operated continuously for the past fifteen years. The Dakota mine is not only a fine property, but possesses historical interest, having been the first quartz lode discovered

in Montana. The Wapello, St. Paul and Excelsior are other prominent mines in the vicinity of Bannack. A tunnel is being run into the mountain to tap the Excelsior vein to open out a large ore body, yielding from \$65 to \$85 gold per ton. Several stamp mills and an arastra are in successful operation on these mines. Horse Prairie and Medicine Lodge Districts, fifteen miles west from Bannack, are yielding considerable quantities of gulch gold, and exhibit very good "prospects" of copper and coal. Chase District, twelve miles from Bannack, contains numerous silver mines, of which the Chase & Campbell lode is the best developed, and just now the most promising. At a depth of 135 feet it shows a vein of quartz from one to two feet wide, carrying ruby silver, copper and galena, 250 sacks of which sampled over \$300 per ton.

The above districts, including Trapper, produced about \$550,000 in gold, silver, copper and lead in 1880, and that promises to be largely increased henceforth, as many new mines are being opened and others long idle are again being worked, while better facilities for treating and shipping ores are constantly provided.

Mining is the great industry of Madison county. The principal minerals are gold, silver, lead, copper, iron and coal; precious stones are quite abundant, and among the most valuable are rubies, garnets and agates. There are ledges of white marble, also of excellent building rock and sandstone, the latter used in the manufacture of grindstones. Madison county has quartz lodes in nearly every section of its large territory, almost every bluff and mountain range being auriferous. There have been over 5,000 quartz mines recorded in the county. Gold is the chief article of export. All the world knows of Alder Gulch, whose unexampled richness first really started Montana on an era of prosperity that will know no end. This gulch lies near the center of the county. It has yielded \$60,000,000 or more, and for sixteen miles it is yet strung with mining enterprises of more or less magnitude. Its yield in 1880 approximated very closely to \$575,000, while the neighboring quartz mines produced about \$125,000. One claim yielded \$60,000 in six months the past season.

The Broadway mine, Silver Star District, in the northwestern corner of the county, yields about \$100,000 in gold annually and quite a cluster of mines in that vicinity are



GARDINER RIVER HOT SPRINGS, YELLOWSTONE PARK.

being worked. The Broadway has a vein from twelve to twenty-eight feet wide, containing free milling red hematite ore, similar to that so common in the Black Hills. It is reliably reported that in the west level of the Broadway an immense body of ore has recently been found, which is as rich as any that has been taken out of the mine. Besides this, another large body has been struck fifty-five feet below the old workings, the lowest assay from which gives \$90 per ton in gold, and running from that amount to very high figures. There are forty stamps and probably a dozen arastras running in Silver Star District.

Thirty miles northeast of Virginia is Red Bluff District, in which a ten-stamp mill and an arastra are cleaning up small fortunes annually without much ado. The Grub Stake mine in this district is shipping gold ore to the Argo Smelting works, near Denver, Colorado, which yields \$200 per ton and fine reserves are in sight. The Red Bluff mine near by is a vein four to six feet wide, also producing very high grade ore, small lots yielding over \$1,000 per ton. A 400 foot tunnel is being driven ahead rapidly to develop this property at great depth and drain it of superfluous water which has hitherto retarded development considerably. The Mohegan, another Red Bluff mine, owned by Messrs. Word & Peale, shows a two foot vein at the depth of 100 feet and produced one lot of a car load of ore sampling \$700 per ton, besides larger amounts of lower grades in 1880.

Gold mines are being worked at a nice profit in Meadow Creek, Wisconsin Creek, Sheridan, Iron Rod, Hot Springs, Alder, Summit and other districts within forty miles of Virginia City. The old-fashioned arastra, the connecting link between the hand mortar and the stamp mill, is found grinding away on every hand and making a good living for many a man of moderate means, but is destined to be superseded by the mill at no distant day, for the capitalist is abroad in the land, and the general gold product of Madison county will then be augmented into millions.

Then, Madison has excellent silver mines, which, though not extensively worked at present, will make a fine showing ere long. The Potosi silver district, which lies forty miles north of Virginia City, in the rugged tobacco Root range, offers the Bullion lode, with a six-inch crevice, showing speci-

mens of silver glance and sulphurets assaying \$30,000 to the ton; the Palmetto, Crown Point, Iria, and twenty other mines, showing veins from twelve inches to two feet wide, with ore averaging from 100 to 500 ounce to the ton. The Alameda mine, only half a mile from Virginia, a comparatively recent discovery, is surprising some of the old miners who have been roaming those hills for fifteen years. With a shaft only seventy feet deep, it is shipping ore in carload lots to Denver which nets, above all expenses, \$200 silver per ton. Brown Gulch, eight miles from Virginia, abounds in veins of low grade silver ores, which will now soon be utilized.

Copper veins, yielding from 25 to 40 per cent copper, zinc ores, carrying 30 per cent zinc, coal which burns nicely in stove or forge, and large deposits of iron, are among other minerals of Madison county awaiting the appearance of capital for their development. Madison county also affords one of the best fields in Montana for the prospector.

Gallatin county, also in southern Montana is rich in gold and silver but development has been slower than in other mineral districts. Bear Gulch quartz district, and Emigrant Gulch placer mines, in the central part of the county, have yielded fairly the past season, with fine prospects for the future. Emigrant Gulch 35 miles west of Bozeman was discovered in 1864, and has been worked ever since. The placer mines there have yielded as high as \$60,000 per year, but their product has settled down to about \$15,000 per annum as a steady thing. Bear Gulch, near by, is most noted for its quartz. The "Graham" lode was discovered in 1878, and about twenty tons of rock were crushed in an arastra that fall, from which about \$1,000 was obtained. The same lode was worked with good success in 1879, about \$5,000 being obtained, the rock running from \$50 to \$90 a ton.

On Pine Creek, a small tributary to Bear, and close to the mines just mentioned, is a very rich gold mine, the Delmonia—the rock from which has averaged over \$100 to the ton as crushed by an arastra. One run of less than two tons of rock netted thirteen and five-eighths ounces of beautiful gold. A number of specimens taken from the mine and crushed in a druggists' mortar yielded as high as \$10 to the pound, and some very rich specimens have run as high as \$40 to the pound. Very promising claims have also been found on

Crevice Mountain and in Boulder Gulch and small lots of very rich ore worked. The owners of these and other mines were all poor at the start and have not been able to put up machinery and work their properties as extensively as these showings warrant, and until recently this section has been right on the border of "Indian Land," so that outside capitalists have not cared to venture even on an inspection. But peace now reigns and the Gallatin county mines are destined soon to be heard from in a gratifying way.

The Clark's Fork silver mines situated on Soda Butte Creek, a tributary to the Yellowstone, 115 miles southeast of Bozeman, are veins of great extent and richness. The Eastern Montana Mining and Smelting Company built a smelter there and partially developed the mines in 1877. During that summer they made a run on about 80 tons of ore, and obtained 30 tons of bullion, worth some \$400 per ton. The Nez Perce Indians, however, pursued by General Howard, passing there in 1877, drove off the workmen and otherwise interfered with the mining and smelting operations, and the hostile Bannacks, taking the same route, and committing still more depredations there in 1878, seriously retarded the operations of the company and put them to a great inconvenience and loss. Jay Cook has recently interested himself in these mines and it is believed that vigorous development will soon be resumed.

Iron deposits are found 15 miles south of Bozeman, and also 40 miles east. The latter are said to be magnetic ores of a very high grade and in immense quantity. A large deposit of lignite is found within five miles of Bozeman, another fifteen miles distant. The product of each is burned in Bozeman, and is called very fair fuel. On the Crow Agency, 100 miles east of Bozeman, a very superior bed of lignite is also found.

CABLE, PHILLIPSBURG AND WESTERN MONTANA GENERALLY

Twenty-five miles northwest of Butte is Cable district, a gold mining camp, made famous chiefly by the Atlantic Cable mine. From one "pocket" in the Atlantic Cable, Mr. Cameron, the owner, has obtained 100 tons of quartz, which yielded \$20,000. I have been into one of the banks at Butte, looking at a cabinet of ores composed entirely of specimens from this mine. The collection weighs 200 pounds and contains \$7,000

worth of gold. There are numerous pieces weighing from an ounce to a pound each almost solid gold. Readers who chance that way will find the collection well worth seeing. It is undoubtedly the most valuable for its weight in America, and if found in Colorado or California would stampede half the population. The Atlantic Cable is being vigorously worked and there are other promising claims in the vicinity which will aid it materially in the near future in attracting attention to the Cable country. A twenty-stamp mill is at work reducing the rich ores of the Atlantic Cable mine.

The Philipsburg silver district in Deer Lodge county, some forty miles northwest of Butte, is an important bullion producer and worth the attention of capitalists and prospectors alike. Reduction works costing \$150,000 were completed there early last year by the Algonquin company, a Philadelphia organization, and \$220,000 worth of silver bullion has been shipped since February, 1880, principally the product of the Algonquin and Speckled Trout mines. The Hope Mining Company, of St. Louis, operating the Hope, Comanche and other mines, have also been very successful and are now preparing to double the capacity of their reduction works which were erected several years ago at a cost of \$150,000. The mines are large true fissure veins and the camp has been a regular producer of from \$300,000 to \$500,000 per year for the past three years. The Granite mine, which has recently changed hands at \$40,000 is attracting unusual attention on account of rich developments in its various workings. The vein is from one to four feet of rock worth \$75 per ton. It is stated that the new owners are seriously considering the erection of a forty stamp-mill, unless one of the three mills already established can be secured to work their ores, some 7,000 tons of which are in sight. Philipsburg must grow in importance and its bullion output in the near future will undoubtedly be very great.

Since the above was written I have come in possession of the following concerning a late strike in the Algonquin mine. It appeared in the Butte *Inter-Mountain* of April 21, 1881, in the shape of special correspondence: "The big strike in the Algonquin shows larger and richer as the work of development proceeds. The ore body is now 20 feet wide and the south wall is not yet reached. I send you samples

taken from all over the face of the crosscut. It will average about 500 ounces. Should this body of ore be only 100 feet long, 20 wide and 60 feet high, it will yield 10,000 tons. If we figure the average at only 200 ounces per ton, we will have over \$2,000,000. It will cost about \$25 per ton to mine and mill the ores. The fortunate owners of the Algonquin property will soon have the pleasure of lining their pocketbooks with silver certificates to the amount of \$1,500,000 as the least reasonable estimate. The Algonquin ore dump is looming up grandly and the mill will soon be turning out silver bricks."

Silver lodes also abound in Moose Creek District, and valuable gold-bearing lodes in Highland, Snowshoe, McClellan and Bear gulches—in fact, Deer Lodge county is literally seamed with gold and silver mines, and adds to these some immense deposits of coal, iron lead and copper. It is now an acknowledged fact that the first gold discovered within the limits of the present Territory of Montana, was right here in Deer Lodge county, a quarter of a century ago. But after that came years of "primeval quite undisturbed," and mining has only been carried on since 1862. In these eighteen years the gulches of Deer Lodge have yielded over \$30,000,000 in gold, almost without the aid of capital, and many thousands of dollars in dust and nuggets still come from some of the oldest claims annually.

In Missoula county, in the northwest corner of the Territory, a grand mineral wealth is also indicated by old and recent developments. In the eastern part of the county is Wallace mining district, in which quartz ledges, rich in gold, silver and copper, are plainly traced to a great length by enormous croppings on the surface. Some 100 mines have been located, and moneyed men are becoming interested. In the western portion of the county, on Nine-Mile Creek, silver mines are being worked and are producing ore assaying all the way from 40 to 1,800 ounces of silver to the ton.

Near Stevensville, in the rugged mountains, overlooking Bitter Root Valley, some very encouraging "prospects" in quartz have recently been obtained.

In the vicinity of Nine-Mile Creek are gulch mines which have yielded \$1,000,000, and are still responding quite liberally to the efforts of Chinamen. In the gulch mines of Cedar

Creek, Quartz Creek and Sunrise districts, about 250 men are quietly plying shovel and sluice fork with satisfactory results.

Some years ago gulch mines were found between Three-Mile and Eight-Mile Creeks, but were never thoroughly prospected until late in 1880, when, on one claim two miners, working three days and a half with a hand rocker, cleaned up \$34 in coarse gold. About one and a half miles below, an-



BEEHIVE GEYSER, YELLOWSTONE PARK.

other company were at the same time sluicing and cleaning up \$5 to \$6 per day in fine gold.

It is a pretty well established fact that different other regions of Missoula county contain gold and silver quartz deposits, but the isolation and long distance from railroad communication have operated not only against prospecting, but also against development when mines were found. There is an excellent vein of soft coal about five miles from Missoula City.

NORTHERN AND EASTERN MONTANA.

Choteau county contains the Bear Paw mines about which so much excitement prevailed early in 1878, and the Judith mines, which created a similar sensation in 1880. Gulch mining operations in these districts have thus far proved rather unsatisfactory, but residents of Fort Benton claim that developments now progressing there will prove them quite extensive and rich. Excellent silver quartz has been discovered in Barker District, near Fort Benton. It is a very heavy galena, carrying 20 to 50 ounces of silver per ton, and from 60 to 75 per cent lead. Choteau county contains several deposits of good soft coal, one of which, near Fort Benton, yields from 7,000 to 10,000 bushels annually.

In passing over Meagher county from Helena, I entered the Belt Mountains by that noted golden avenue, "Confederate Gulch." For ten miles there is a constant succession of old gulch and bar diggings, where, in 1865, the occupants were numbered by thousands, and where, even yet, a determined rear guard meets encouragement in the sluice-box sufficient to warrant such lingering. The gulch at Diamond City, and above, was long ago stripped of earth and gravel to bed-rock, and the mountain on the left is in a fair way to make the same inevitable journey down through the sluice-box. A few steps above Diamond City is Montana Bar, from which \$1,000 in gold were taken from a single pan of dirt in 1868. The bar was undoubtedly the richest ever discovered in America, for its size. It is only half a mile long, and from 200 to 300 feet wide. Each 100 feet of this half mile panned out more than \$100,000, and the novel spectacle of four-horse wagon loads of gold leaving camp with a battalion of armed men as a guard, was witnessed here more than once. Meagher county is credited with a total yield of \$10,500,000 in gold. This is nearly

all from the placers, but machinery is now being placed in trim to work the rich gold quartz so long neglected. There are numerous gold, silver, lead and copper ledges in Meagher awaiting the capital that the railroad era is bound to bring, and the coal deposits are probably the most extensive in the Territory.

White Sulphur Springs, 75 miles east of Helena, is the center of several very promising mineral districts. The Copperopolis copper mines near there, have, in years past, been worked at a profit, but their owners are now awaiting the era of cheap transportation, when such profit can be enlarged ten-fold. Birch Creek and Sixteen-Mile Districts, only slightly developed, have yielded some fabulously rich ores.

OTHER QUARTZ DISTRICTS.—DISCOURAGEMENTS.

There are dozens of other districts, some equally worthy as those I have named, and it should be remembered that in those so briefly touched are hundreds of mines now being worked at a profit in a small way by comparatively poor men. This grand aggregation of claims, each of whose wealth has been pretty fairly established, offers to individuals of large means, or to corporations, many opportunities to purchase, consolidate and improve. The Montana quartz boom is at hand, and the old miner who held out so faithfully, deserves what is surely coming within the next two years.

The 400 miles—and often more—of wagon freighting, to and from Montana mines, has been the most discouraging item. No other territory has been so isolated. While gulch mining operations could often be carried on without much dependence upon outside auxiliaries, the far more important quartz-mining interest has demanded heavy machinery, costly and bulky crushers and smelters, adjuncts to successful operations, which had to suffer these aggravating delays and enormous expenses incident to the long overland jaunt, or the almost equally unsatisfactory Missouri river trip, which was of avail only three or four months of a year. Thus far Montana mines have also been almost entirely developed by home capital, and the instances are many where the money has been borrowed by the miners for the purposes of development, at an interest of from *two to four per cent per month*.

The chief obstacles, therefore, to the development of the

quartz mines of Montana, have been lack of capital, bad management, due to the want of experienced superintendents, and the enormous cost of machinery. When freights from Chicago or St. Louis were never lower than 5 cents, and frequently as high as 10, 12 or 15 cents a pound, it cost two or three times as much to bring machinery into Montana as was paid for it at the place where it was manufactured, and a man not only had to have a good mine, but considerable ready capital, in order to be able to develop it and bring it into a paying condition. Some of the most promising mining enterprises in this Territory have also failed on account of ignorance or extravagance in their management, and these failures have deterred capitalists, who at best were timid about investing their money in a country so difficult of access, from becoming interested even in the good properties.

To separate these precious metals successfully; to crush tons of stubborn and solid rock beneath the ponderous stamps of the quartz mill for ounces of dust; to melt large masses of ore in the fiery furnace of the smelting works for silver "buttons" or "bricks," and to receive pay for handling the worthless portions, taxes skill, ingenuity and industry to the utmost. But where mines are so rich that they justify the miner in putting ores in sacks and hauling it 400 miles to the railroad, and then shipping it to the seaboard or even across the ocean, as has been done in Montana, for treatment, they deserve railways—those grand agencies for the development of all countries. The "railway era" of Montana will indeed be a happy one; for it will unloose the fetters of hundreds of rich mines and convey untold millions of wealth to the outside world.

GULCH MINING.

In my allusion to gulch mining at the outset, I did not mean to convey the idea that there is no future for that branch of the industry. The rich and easily handled gravel has all found its way through the sluice box once, and the day of extravagant yields is gone. But hundreds of "lean" claims are still being worked, and will be for years, by whites and Chinese. These pay all the way from \$1 to \$4 per day—in exceptional cases, notably in old Alder gulch, (which has poured out its \$60,000,000), and in several claims in the vicinity of Deer Lodge, they do a little better. Last Chance gulch, in which

Helena is located, pays about \$500,000 per annum, and will keep it up for several years yet. Alder and tributary gulches do about as well. Montana Bar, near Diamond City, from which \$1,000 in gold was taken from a single pan of dirt in 1868, and every fifty feet of which panned out over \$100,000, still sends a small offering to the banks annually. In fact, good placers have been discovered and profitably worked in every organized county in Montana, the total number of gold producing gulches being estimated at 500. Some prominent mining men go so far as to say that much good ground still remains in almost every one of them, which will yet be washed either by the hydraulic process or that of ground-sluicing, giving employment at good wages to great numbers of men, profit to owners of claims, and contributing steadily to the country's annual product of gold. I believe the annual yield of gold from the placers of Montana will considerably increase during the next few years. The completion of railroads into the Territory will undoubtedly cause an influx of population, which, with a reduction in the expenses of living, will make labor cheaper. Cheaper labor will make it possible to work over ground that can now be washed only with loss.

There are many acres of rich "hill diggings" in Montana, containing millions of money, but it will take large capital to lead water to them, and such enterprises will, of course, not now attract general attention in a country where quartz holds out so many seductive showings as in Montana. Many of the rivers traversing the most productive placer grounds are narrow, and have been confined within their rock-worn courses for ages. Their banks carry the "sands of gold" down to the marks of lowest tide, and there is no doubt that the beds of these streams are richer by far than any of the surrounding country. Montana is seldom annoyed by sudden great floods, such as render the river mining of California so expensive, and sometimes even precarious; but has generally an uninterrupted and comparatively even flood of water from the spring opening until the streams are closed again by the winter frost. The expenses of draining these narrow streams would be inconsiderable, with the almost certain return of immense profits to those who should prosecute the enterprise in a manner worthy of its importance.

COAL, IRON, COPPER, LEAD, MARBLE, ETC.

As has already been noted, coal, iron and copper abound in nearly every county in the Territory. Copper is found in immense deposits at Butte, near White Sulphur Springs and at other points, assaying from 20 to 50 per cent pure. Concerning Montana copper ores, Raymond, in his report of 1877, says: "The almost uniform experience of working the Montana copper veins has been to demonstrate that the veins improve in width and richness the deeper the shafts are sunk. At a depth of from 80 to 100 feet several of them now show ore that will average 50 per cent copper, though near the surface the same openings yielded ore carrying but 25 to 33 per cent. The lodes of copper are abundant, and the veins from 4 to 100 feet in width."

The smelting works at Helena had occasion not long since to advertise for iron ore, to be used for fluxing with silver ores, and were immediately deluged with samples *from forty-eight different deposits or mines*, running in value all the way from 25 to 80 per cent pure iron, and representing every conceivable variety of ore. An iron mountain in Deer Lodge county, three or four times larger than the celebrated iron mountain in Missouri, averages 30 per cent of that metal. Coal beds lie within three miles. An iron furnace is to be built there the coming season.

About 60,000 square miles of Montana's area is underlaid with bituminous coal. Immense veins of this are found along the Missouri, Yellowstone, Dearborn, Musselshell, Powder and other rivers, and but few sections of the Territory are deprived of respectable proportions. Lead ores averaging 75 per cent and a proportion of silver are frequent, and inexhaustible in quantity.

There is a mountain of beautiful marble, large enough to build the State Houses of the Union and fine enough to furnish material for the choicest statuary, within fourteen miles of Deer Lodge City, and deposits of great value, though not so large as this, near Helena and Virginia City. Considerable "float" quicksilver has been found near Butte, and it is believed a large deposit will, from present indications, be found soon. Zinc ore is also found, running 20 per cent of that metal. There are such minor offerings of mother earth as splendid

beds of fire-clay, quarries of unexcelled building stone, and deposits of plumbago, in various parts of Montana.

Montana's gold and silver yield since the first gold discovery at Bannack in 1862, as near as can now be computed, is as follows:

For 1862.....	\$ 600,000	For 1873.....	5,200,000
" 1863.....	8,000,000	" 1874.....	4,000,000
" 1864.....	16,000,000	" 1875.....	4,100,000
" 1865.....	18,000,000	" 1876.....	4,500,000
" 1866.....	17,500,000	" 1877.....	3,750,000
" 1867.....	16,300,000	" 1878.....	4,867,000
" 1868.....	15,000,000	" 1879.....	5,000,000
" 1869.....	11,200,000	" 1880.....	6,500,000
" 1870.....	9,000,000		
" 1871.....	8,000,000	Total.....	\$164,517,000
" 1872.....	7,000,000		

Which is distributed among the counties as follows:

Madison.....	\$ 79,500,000	Jefferson.....	5,500,000
Lewis and Clarke.....	29,300,000	Missoula.....	1,000,000
Deer Lodge.....	26,367,000	Gallatin.....	650,000
Meagher.....	13,000,000		
Beaver Head.....	19,500,000	Total.....	\$164,517,000

Of course the production of gold during these years was vastly greater than that of silver, but the annual increase in the yield of gold since the lowest bullion yield was reached in 1877, has not been so large. It is a fact admitted by such authorities as Raymond and the many mining experts who have examined the Montana silver lodes, that none others in the entire Rocky Mountain region give better promise of continuing and rapidly increasing their output than those of Butte, Philipsburg, Glendale and Jefferson, Montana. Take this source of wealth, which is soon to prove Montana a peer of any of her sisters, and in the table following note the steady and rapid tribute from nothing in 1872 to millions in 1878. The estimates are from data furnished by the Helena banks, express offices and the United States assay office at that place, and are believed to be rather under than over the true amount:

In 1873 Montana's silver production was.....	\$ 201,300
In 1874 " " " "	490,766
In 1875 " " " "	660,000
In 1876 " " " "	1,132,976
In 1877 " " " "	1,250,000
In 1878 " " " "	2,400,000
In 1879 " " " "	2,700,000
In 1880 " " " "	3,500,000

CHAPTER V.

FARMING AND FRUIT RAISING, IRRIGATION, YIELDS, AND PRICES.

BLESSED with an excellent climate, presenting the finest valley system to be found in the entire Rocky Mountain plateau, and possessing a soil singularly fertile and lasting, Montana offers unexceptional inducements to the agriculturalist. After what has been said about the climate it will be understood that irrigation is necessary in most of the valleys. Many homes can yet be found where the owner can have his own clear mountain stream rippling by his door and irrigate his land by turning a few furrows with the plow. But even where it requires some capital or association of labor to lead large ditches or canals from the rivers to the desert lands, irrigation is a small drain of labor or means when compared to the average losses annually sustained in "rainy States" through flood or drouth. By irrigation the Montana farmer insures his crop, and as it is estimated that the average expense of irrigating Montana farms is not over 50 cents per acre per annum, I would call it very cheap insurance. At the worst the cost of such improvements and of bringing the land into cultivation is much less than is generally required to improve and cultivate land in a timbered country, and ditches once made are always afterward ready for use; they also afford convenient water-power, in many places, for any purpose that a farm or dairy may require. I remember noticing on a Madison county, Montana, farm an inexpensive power of this kind almost at the door, which was utilized for churning butter, sawing wood, boring and mortising lumber, turning the grindstone, fanning-mill, etc.; and indeed these conveniences were noticed on many farms in the Territory. Crops are generally irrigated twice each season in Montana. One man can irrigate from 60 to 80 acres of grain. It is found, by experience, that irrigation not only keeps the land up to its original fertility, but constantly improves it in quality, though the same crop may be raised years in succession. Stewart, in his valuable work on irrigation, says: "Water, when used in irrigation, brings within reach of the

plants a largely increased amount of nutriment. Water is the universal solvent. No water in its natural condition is pure. The water of springs and streams holds in solution or suspension a quantity of mineral and gaseous matter, that possesses high fertilizing value." Irrigation has been used on the same soil two hundred years in New Mexico, without other fertilizing properties than those brought by the water. The farmer is also free from any solicitude in regard to drouths or floods or storms; the progress of his crop is uniform from seeding time until harvest; if he is inclined to "much water" he can use it at his pleasure; if he thinks a light



GIANTESS GEYSER IN ERUPTION.

"sprinkling" will do, the facilities are at hand. By irrigation pastures are kept green in the late summer and fall, as well as in spring; and trees obtain a longer and larger growth in one season, than by any unaided process of nature. It is

thought that the superior quality of the fruits and vegetables grown in Rocky Mountain valleys is as much attributable to irrigation as to the climate.

EXTENT OF ARABLE LANDS.

Of the 93,000,000 acres of land in the Territory, 16,000,000 are suitable for cultivation. An ex-surveyor general of the Territory estimates that there is in the more prominent valleys alone, room for 36,000 first-class farms of 160 acres each, while another is of the opinion that there is a strictly agricultural domain here greater in extent than the entire area of Ohio. In few of the valleys there is more than one-fourth of the arable land claimed, while in many one-tenth would be a nearer estimate. Only about 300,000 acres are accounted for on the tax list as improved lands, although 1,600,000 acres have been entered under all acts of Congress. The extreme productiveness of the black loamy soil is beyond all question—an average crop of almost any of the cereals or vegetables on old or new lands, unfertilized, being about 75 per cent larger than on the best bottom lands in any state east of the Missouri. Irrigation, as already noted, has generally been considered a necessity, although I know of localities in Montana in which from 25 to 40 bushels of wheat to the acre were produced without it the past season. Thousands of acres of the richest and warmest soils—those found high up on bluff and mountain sides—were in 1877 sown with fall wheat, and the harvest last year of this grain, produced without irrigation, was so bountiful that many farmers who have hitherto raised spring wheat exclusively in the valleys, are now resorting to the hitherto despised high lands. Snow falls deeper on these altitudes than in the valleys, and keeps the grain well covered during much of the winter. However, the most conservative engineers and others who are thoroughly familiar with the country and whose opinions are entitled to credence admit that three-fourths of the entire agricultural area, or 12,000,000 acres can be irrigated. The 30,000 acres now in wheat produce an average of twenty-five bushels per acre. Improved cultivation would increase this average, as is shown by many farms whose average rarely falls below thirty bushels and often reaches forty bushels per acre. The man of figures can readily see that the production of 100,000,000 bushels of

wheat per annum need not be postponed to a very distant future in Montana, if navigable waters reaching from her center to the sea and the railways afford proper avenues to market.

VARIETIES OF LAND AND SOIL.

It should be stated here that agricultural lands in Montana are of three distinct classes: first, the bottom or meadow lands, usually possessing a rich black and somewhat heavy soil, lying next to the streams, always easily irrigated, and on that account generally taken by the first settlers; second, the bench-lands, rising terrace-like toward the neighboring mountains, possessing, as soil, a warm sandy loam, always easily drained, usually presenting no great obstacles to irrigation, and now being generally recognized as the land capable of the widest range of production, and being the least subject to frosts; and third, the high bluff lands already noted.

The virgin soil of the bench-lands is so mellow and easily broken up that we often see scraggy little mustangs, weighing from 700 to 800 pounds pulling the plow as easily as they would in many long cultivated fields in the east; the strongly rooted stubborn turf, which at first always opposes itself in the east, is here seldom if ever encountered. Plowing for spring wheat commences in February, and the wheat is often sown during the same month. Montana wheat, by a recent comparative analysis at St. Louis, takes precedence of Minnesota spring or western winter grades. Oats are frequently raised weighing 44 pounds to the measured bushel. Wheat can be raised at 50 cents per bushel, or \$12.50 per acre, taking the low average of 25 bushels, and at ordinary prices will net about \$14 per acre. Oats can be raised at an expense of \$11 per acre, and yields a larger profit than wheat. Corn is not produced on a very large scale on account of cool nights in most locations. It can be raised at a cost of \$7.50 per acre, and will return about the same profit as wheat. Potatoes can be raised at a cost of \$25 per acre and will return a profit of from \$75 to \$90 per acre. The risks are no greater than those which present themselves everywhere, while the margin for profits will average considerably above that of any country with which I am familiar, and if we desire to note exceptionable yields other sections are left far behind. For instance: One

man can attend to 60 acres of wheat, which will yield in the best season, 3,600 bushels, equal to 1,200 bags of flour of 100 pounds each, which may ordinarily be calculated to sell for three dollars per bag yielding an aggregate of \$3,600. The cost of seeds, sowing, irrigation, harvesting, threshing and flouring will not exceed \$14 per acre. The producer thus realizes a net income of \$2,760, or about \$46 per acre.

LARGE YIELDS.

Exceptional yields of grain and vegetables are chronicled which, to the farmer on artificially fertilized soils in the east, would seem simply impossible. At various Territorial fairs, held at Helena, samples of wheat yielding 60 to 100 bushels per acre, of barley from 75 to 105 bushels per acre and of potatoes 500 to 613 bushels per acre have been exhibited with sworn statements of parties who measured the ground and crops. The *average* yield of wheat is placed by residents at 30 bushels per acre, twice as large as that of the great wheat state of Minnesota, and nearly three times as large as that of Ohio. Corn in the higher valleys, as already noted, is not always a success, but in such valleys as the Yellowstone, Bitter Root and Missouri, it was successfully cultivated in 1879. Specimens at the last Territorial fair were unusually large-eared, and were from fields which yielded from 30 to 50 bushels per acre. The reader may be interested in noting a few names of farmers whose experiences, in the way of producing large crops, for the past year or two have come under the observation of the writer. Following are the names of several prominent farmers of different valleys, with size of fields, amount of grain threshed, the average yield per acre for one season, and the selling price of the crop:

NAME.	LOCATION.	Field in acres	Crop and Yield bushels.	Av. per Acre, bushels.	Value of Crop.
A. G. England	Missoula Valley....	160	Wheat, 7,000...	43¾	\$8,400
"	Missoula Valley ...	40	Oats, 2,000...	5	1,200
Robert Vaughn.....	Sun River Valley...	4	Oats, 410...	102½	246
M. Stone	Ruby Valley	100	Wheat, 6,000...	60	7,200
Brockway's Ranch	Yellowstone Val'y	8	Oats, 600...	75	360
Brighan, Reed.....	Galatia Valley	4	Oats, 322...	103½	362
Marion Leverich.....	Galatia Valley	23	Wheat, 1,150...	50	1,340
William Reed.....	Prickly Pear Val'y	50	Oats, 3,500...	70	2,100
Charles Rowe	Missouri Valley....	23¾	Wheat, } 1,200...	45	1,250
			Oats, }		
Con. Kohrs.....	Deer Lodge Valley	11	Oats, 1,200...	100	720
John Rowe.....	Galatia Valley.....	85	Oats, 4,982...	57	2,980
Robert Barnett.....	Rose Creek Valley	48	Wheat, 2,200...	45 5-6	2,69
S. Hall.....	Ruby Valley	400	Wheat, 10,000...	50	11,000

MARKET GARDENING.

All garden roots grow enormously large, and peas, beans, cabbage, cucumbers, etc., attain great size and are of excellent quality. Irish potatoes weighing from 2 to 4 pounds each, rutabagas from 15 to 20 pounds, and turnips 30 pounds each, were among the exhibits of Gallatin, Bitter Root, and other valleys, the past season. Besides these hardy cereals and vegetables produced in all the inhabited valleys, we find some farms in the Bitter Root and other sunny basins where large and small fruits, tomatoes, melons, and even tobacco, egg-plant and peanuts are among productions which indicate a not very orbidding clime.

I know of no better opportunity for the investment of small capital under intelligent direction than in this industry. Few families have gardens; even the heavy stock owner or dairyman generally buys his vegetables or does without. The cities and mining camps are quite generally supplied by Chinamen ranchmen from neighboring valleys and occasionally by small gardens in the outskirts of towns which furnish a limited supply of products. The supply is rarely up to the demand, and the proportion of home-produce is constantly increasing. Producers readily obtain large prices for their commodities. New potatoes when first in market, last summer, were sold for 10 cents per pound, and at no time during the summer retailed for less than $2\frac{1}{2}$ c. Turnips and cabbages brought as much as 3 cents per pound, and cauliflowers—of which the finest possible specimens are grown—from 10 to 20 cents per head; celery often 25 cents a bunch, and beets, parsnips, salsify, etc., bring correspondingly high prices. Tomatoes, which are a somewhat more uncertain crop on account of the possible early frosts, bring from 10 cents to as high as 30 cents per pound.

WHAT A GARRISON PRODUCED.

The following consolidated report of vegetables raised in Company gardens at Fort Ellis, Gallatin county, during a recent season, will convey an idea of the profits of market gardening in this mountainland. It is worthy of careful study, especially by those who are familiar with the yields of artificially fertilized soils in the east:

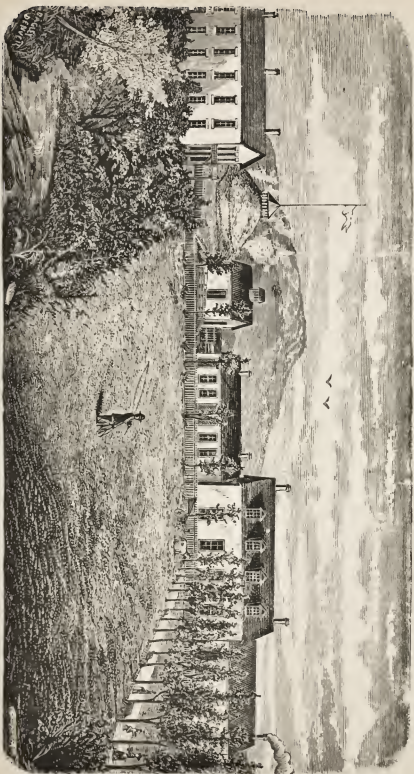
Company and Regiment.	No. of Acres.	Potatoes.	Onions.	Turnips.	Carrots.	Beets.	Parsnips.	Cabbage.
		Bu.	Bu.	Bu.	Bu.	Bu.	Bu.	Heads
F, 2d Cavalry.....	7½	1,100	90	500	60	50	10	3,610
G, "	5	550	60	60	35	15	20	2,500
H, "	6	1,200	130	35	40	40	25	3,300
L, "	5	700	50	150	25	2,300
G, 7th Infantry....	3	315	6	40	12	...	20	800
Total... ..	26½	3,865	336	785	172	105	75	12,500

General Brisbin states that the value of the several articles, if they had to be bought in Montana, would be about as follows: Potatoes, \$3,865; onions, \$2,352; turnips, \$85; carrots, \$206.40; beets, \$315; parsnips, \$225; salsify, \$9.40; cabbage, \$125; total, \$7,182.80, from a 26 acre field. Rutabagas raised the past season weighed as high 17½ pounds each, without the tops. One potato weighed 4 pounds, and another 3 pounds 4 ounces. All products were pronounced by General Brisbin among the best for size and flavor he had ever seen. The soldiers produce all the vegetables they need, with a surplus for sale, and live better than at any post in the country. The soil is a rich black loam, and has needed very little irrigation.

FRUIT GROWING IN MONTANA.

Few regions in the Rocky Mountains, or even in the east can boast of a greater variety or a finer growth of wild fruits than Montana. Three varieties of whortleberries, raspberries, gooseberries, strawberries, service-berries, Oregon grapes, choke-cherries, buffalo-berries, and in some localities plums, are prominent kinds which almost unfailingly yield well. In most localities east of the Rockies, where the soil and climatic conditions are favorable to the growth of such an array of wild fruits, it is a foregone conclusion that certain tame varieties will flourish. However, in no new country is any interest so slowly taken hold of as fruit-growing. Montana is only an average example of this. But I am gratified to state that I have visited several Montana orchards in which were the unmistakable golden, luscious proofs that the new era is dawning. Far up in the northwestern corner of the

DEER LODGE MINERAL SPRINGS, DEER LODGE VALLEY, MONTANA.



Territory—yes, north of the forty-sixth parallel!—in Bitter Root Valley, near Missoula, I came upon the splendid grain and fruit farm of the Hon. E. W. Bass. In this short article, much as I wish, I can say nothing of the beautiful stretches of meadow, of the broad fields of ripened grain—for it was in early autumn—or of the hundred attractions surrounding the elegant country home, but at the outset can state the very interesting fact that I plucked some of the largest and most delicious apples, plums, grapes and Siberian crabs I have ever seen. Mr. Bass has 3,000 apple trees from two to six years old, of which number 1,000 are flourishing in the orchards. Five or six five-year-old trees bore quite freely, and 500 have reached bearing age. The Rambo, Willow-twig and the Red Astrachan seem to be the favorites thus far, although fifty different varieties are ready to bear. Grafts made a growth of five feet during the past season. About twenty transcendental crab trees were loaded with ripe fruit during our visit—some so full that props were necessary to keep the branches from breaking. Over 200 pounds of fruit have been sold from one of these during the season at 15 cents a pound, or a total of *thirty dollars for one year's crop of a single tree*. Of twenty-five fine pear trees, several Bartlett's bore last year. A nice little orchard of tame plums near by was a feast for eyes, a disturber of gastric juices at the same time. Among these trees were some fairly twisted and groaning under the weight of the fast-ripening fruit. The greengage plum succeeds admirably here. A trellis of Concord grapes, with here and there its beautiful fruitage, was not lacking. Mr. Bass grows all the small fruits. Of these over 1,000 boxes of strawberries, and 500 gallons of currants, gooseberries, raspberries, etc., were marketed during the season at prices ranging from 40 cents to \$1 per gallon.

There are other thrifty orchards near Missoula, and on the farm of A. G. England, I ate some delicious ripe strawberries, fresh from the vines, *on the 8th of September!* Mr. England call them the everbearing strawberry, and says he never fails to pick fine ripe berries from that patch at any time from June till November. The exhibit of fruit at the Missoula county fair last fall comprised thirteen varieties of standard apples among which were the Northern Spy, Red June, Willow Twig, Duchess of Oldenburg, Red Astrachan,

Winter Pippins, Rambo, Romanite and Ben Davis. Crab apples of many varieties were also exhibited. The variety of apples which experiment has proved to be the best adapted to the Montana climate are the Duchess of Oldenburg and the Red Astrachan which are as hardy as crabs. They were first brought to the Bitter Root Valley in the year 1870, and have never yet missed a crop.

In Deer Lodge county, near the center of the Territory, and at a much greater altitude than that of the localities above noted, Mr. Addison Smith reports: "We raise, in this county, currants, gooseberries, blackberries, raspberries and strawberries; apple, pear, plum and cherry trees grown by me are doing well. I planted an apple tree in 1873, which was eaten to the ground the same year by cattle. It came up in 1874, and in 1878 was full of blossoms and bore several apples, which matured before frost."

In the suburbs of Helena, at an altitude of 4,300 feet above the level of the sea, Mr. D. W. Curtiss has the largest tract devoted to the cultivation of small fruits in the Territory. Nine acres are planted with strawberries, and he has 8,000 currant bushes, 5,000 gooseberry, a few raspberry and other plants, his entire tract consisting of twenty-four acres. Mr. Curtiss states emphatically that he can produce any of the smaller fruits better than in Ohio, his old home, if let alone by the grasshopper. With the assistance of one man last year he produced 7,000 quarts of strawberries, a fine crop of gooseberries and raspberries, and has ripened 1,000 bushels of tomatoes in one season. His sales of fruit last year ran as high \$200 per day at the best season. Strawberries and other small fruits sell readily at from 40 cents to \$1 per quart, and it is a common pastime of Helena citizens to walk through his grounds and pay fifty cents for the privilege of eating all the fruit they wish while there. Raspberries sell at 50 to 75 cents a quart, and for the very first in market one dollar is obtained. Currants bring 50 to 60 cents per gallon. Tomatoes sell at from 10 to 25 cents per pound. Mr. Curtiss came from Ohio to Helena ten years ago, and almost penniless, embarked in small fruit culture. He has now one of the finest fruit farms in the west, from which he markets from \$4,000 to \$7,000 worth of fruits and vegetables per year. He calls Montana "the best poor man's country in the world."

POULTRY—A CHANCE FOR HOUSEWIVES.

I firmly believe that no land under the sun offers such a favorable field for diversified rural industry as Montana. Take here, in connection with grain raising, the production of poultry, eggs, butter, pork, vegetables, and similar items now almost unnoticed as "not worth bothering about," and the industrious and frugal farmer and housewife, managing as of necessity do those in the thickly settled states, should soon make themselves independent. It is often almost impossible in the winter to secure fresh eggs at 75 cents per dozen in Montana cities, and during the past winter I have seen \$1 freely offered at Helena and Butte. Butter ranged from 40 to 60 cents the entire winter, and it was frequently impossible to secure a good article. The Montanian who desires to celebrate Christmas in the time-honored way—turkey and all—will make a sad inroad on his bank account; as for spring chickens—at from 50 cents to \$1 each they *might* be of recent origin, but unfortunately that class is never numerous enough to "go 'round." Turkeys sell at from \$2.50 to \$5 alive and at 28 cents per pound dressed. So few ducks and geese are raised they seldom appear in market. There seems to be nothing in the climate to prevent this industry, but the greater cares incident to the production of grain and live stock seem to have thus far nearly monopolized the attention of settlers.

MARKETS—PRICES OF PRODUCE.

The constant increase in the magnitude of railway, mining and other operations in all parts of the Territory justifies the belief that any considerable surplus of produce cannot be raised in Montana for years to come, and until that time prices must remain from 50 to 100 per cent higher than in the "States." Following were the January, 1881, wholesale prices paid by merchants and hotel keepers to ranchmen at the principal cities in Montana. The figures will, on most items enumerated, average about the same for wagon loads during December, January February and March of each year:



AN EXTINCT GEYSER CONE, YELLOWSTONE PARK.

AT BUTTE.

Flour XXXX, \$5 per cwt.
 Graham, \$5 per cwt.
 Wheat, per lb., $3\frac{1}{2}$ cts.
 Oats, per lb., $3\frac{1}{2}$ cts.
 Butter, per lb., $35\frac{1}{2}$ to 45 cts.
 Eggs, per doz., 60 cts.
 Corn meal, per lb., $5\frac{1}{2}$ to 7 cts.
 Beef, on foot, 6 cts.
 Beets, per lb., 3 cts.
 Hay, per ton, \$27 to \$28.
 Fresh fish, 20c per lb.
 Cheese, 15 to 18c per lb.
 Barley, \$2.50 to \$2.75 per cwt.
 Dried beans, 7 cts.
 Mutton, per lb., 10 cts.
 Pork, dressed, per lb., 13 cts.
 Veal, per lb., 10 cts.
 Venison, per lb., 6 cts.
 Chickens, per doz., \$6.
 Wood, per cord, \$6.
 Rutabagas, per lb., 2 cts.
 Potatoes, per lb., $3\frac{1}{2}$ cts.
 Onions, per lb., 8 cts.

AT HELENA.

Flour, choice, per cwt., \$5.50.
 Wheat, per cwt., \$2.75.
 Oats, per cwt., \$2.50.
 Barley, per cwt., \$2.50 to \$3.20.
 Bran and Shorts, per cwt., \$2.50.
 Corn meal, per lb., $6\frac{1}{2}$ cts.
 Peas, per cwt., \$1.25.
 Chopped feed, per cwt., \$1.35.
 Potatoes, per cwt., \$2.50 to \$3.50.
 Cabbage per lb., 4 cts.
 Butter, per lb., 60 cts.
 Cheese, per lb., 18 cts.
 Eggs, per doz., \$1.
 Pork, per cwt., \$10.
 Chickens, per doz., \$6.
 Turkeys, each, \$2.50 to \$5.
 Ducks, each, 50 cts.
 Fish, per lb., 25 cts.
 Hay, per ton, \$30 to \$25.
 Wood, per cord, \$6 to \$7.
 Onions, per lb., 7 cts.
 Rutabagas, per lb., 2 cts.
 Fresh fish, per lb., 20 cts.

These prices it must be remembered are obtained for the products of land that cost little or nothing, and as already shown the outlay for production is not by any means in proportion to the extravagant prices.

In 1879 the different valleys of Montana, with their mere sprinkling of farmers, produced about 400,000 bushels of wheat, 600,000 of oats, 50,000 of barley, 12,000 of corn, 500,000 bushels of vegetables, and 65,000 tons of hay, the total value of agricultural products being not less than \$3,000,000.

Montana farmers, as a rule, have the best labor-saving machinery. There are eight or ten steam threshing machines in Gallatin Valley alone, and about every third prominent ranchman boasts of the latest improved self-binding harvester. There is no spot on earth where farmers live so comfortably on so few hours labor. The ranchman is an honorable, thrifty and independent nobleman, with prosperous crops, and always a hundred or more cattle or horses upon his range to swell his bank account. The ranchman of Montana is not the dull, plodding worker that you might suppose. He frequently has a large and well selected library, and he can in some instances show you a thousand-dollar piano, and very often some other musical instrument of value. He hires his labor at from \$30 to \$45 per month, lives liberally, markets his products, watches his brands and round-up.

THE COST OF HOMES.

Few men are so poor that they cannot obtain a good home in Montana; still, the emigrant of to-day will find his share of difficulties to encounter. Hard work and careful management for the first few years are indispensable. Agriculture is a very different thing here from that in the east, and it will take a few years earnest study to adapt himself thoroughly to the new order of things.

Of course, homestead and preëmption laws apply to government lands here as elsewhere. The homestead law grants settlers 160 acres, on condition of continued residence for five years, and the payment of land office fees, which, altogether, do not exceed \$18. Preëmption law grants 160 acres at \$1.25 per acre, on condition of a continued residence and improvement for one year. The timber culture act permits a citizen to enter 160 acres on condition that one-fourth of the area shall be planted to trees, cultivated and protected for eight years. Under the operation of these laws any settler can become possessed of from 240 to 320 acres of land at a trifling cost. Special privileges are granted honorably discharged soldiers, they being allowed to deduct each year of their service not exceeding four years, from the period of residence required of others to perfect a homestead title.

The desert land act applies especially to regions like Montana, and permits any settler to take up 640 acres of land which could not be cultivated without artificial moisture. A cash payment of twenty-five cents per acre is required at the time of entry; irrigating ditches must be constructed to cover such tracts within three years, and at any time during that period the claimant can make his title good by paying \$1 additional per acre, and making proof that the land has been reclaimed by irrigation.

Fencing and building material being abundant in nearly all localities, the matter of making improvements is one of less difficulty than almost any country I know of. Nearly all residents first built good comfortable log houses at almost no expense but their own labor, and the same can be done to-day. This also applies to fencing. Improved farms in the best settled valleys often sell quite cheaply—at from \$12 to \$20 per acre—for the very evident reason that there are thousands of locations open to homestead or preëmption where the owners can

make the same improvements for that amount of money or less.

Knowing that he can here establish himself comfortably at a trifling outlay, the settler may also like to learn that through humane exemption laws, a homestead of the value of \$2,500 is free from sale and execution. There are also opportunities for trusty men without means to rent farms or take stock on shares, the provisions of such contracts always being more liberal than in the east.

THE DRAWBACKS.

The only serious drawbacks Montana farmers have ever contended against is the grasshopper. These pests have never yet committed such wholesale destruction in the mountain land as in the prairie states, although individuals have at times lost all their grain. The 'hopper seems to descend on the Montana valleys for three or four consecutive years, and then almost entirely disappears for a similar period. He delights in making short calls here and there. One farm may be devastated, while the next will be left unharmed. For seven years none were seen in the great Bitter Root and other valleys in western Montana. A destruction of crops has never been general or complete, there has of course been no suffering among those whose farms were visited, and most wheat-growers agree that they can well afford to lose every third crop as long as yields and prices remain so favorable in the good years. During the growing season of 1880 early frosts, which previously had rarely manifested themselves except in valleys of more than average elevation, injured crops here and there in Gallatin, Madison and other valleys. But the destruction was by no means general and the visitation was cheerfully passed by as one of those phenomenal things in nature which are not to be looked for often.

FARM MACHINERY AND ANIMALS.

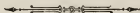
Following were the prices in January, 1881, in the principal Montana settlements of farm machinery, teams, etc.:

Mowers.....	\$115 00@	150 00
Reapers.....	200 00@	300 00
Reapers and mowers combined.....	225 00@	275 00
Threshing machines, 8 and 10-horse.....	850 00@	1,000 00
Deere and Buford plows, 12-inch.....		22 00
Gang plows.....	100 00@	125 00



A CATTLE RANCH IN MONTANA.

Bain and Schuttler farm wagons.....	\$125 00@	150 00
Two-horse teams.....	150 00@	225 00
Mule teams.....	200 00@	300 00
Oxen, per yoke.....	80 00@	100 00
Saddle horses, each.....	40 00@	75 00
Stock cattle, all ages, average.....	15 00@	18 00
Sheep.....	2 50@	3 50



CHAPTER VI.

STOCK RAISING AND DAIRYING—EXPERIENCES WITH CATTLE,
SHEEP AND HORSES.

IT is an open question which is the more important industry in Montana, stock-raising or mining. I give preference to the former because it is the surest, and, in a majority of cases, the shortest road to fortune, and does not require near so much study or capital, if regularly followed as a business as the latter. The Territory has no superior, and I doubt if an equal, as a grazing region. The 38,000,000 acres of grazing lands already noted are covered with nutritious bunch, buffalo and other grasses whose fattening qualities are only second to grain, and curing as they grow in an atmosphere which scarcely admits of decay, are better food in December than in May. The large herds of cattle and horses are never fed and sheep rarely, but roam in their fatness the year around upon the carpets of luxuriant bunch-grass, beside which, clover, blue-grass, and the far-famed mesquite sink into insignificance. It often follows in thick, even carpets through valleys and over mountain tops for hundreds of miles at a stretch. It imparts a flavor to beef or mutton, in summer and winter, that the best forage found in the states cannot produce. Never in all my ramblings, have I tasted such delicious, juicy, tender steaks, as in the homes and hotels of Montana. Hon. R. W. Raymond, United States Commissioner of Mining Statistics, who has traveled extensively in Montana, says on this subject: "To be more exact I might say that to pasture a horse on bunch grass is like giving him plenty of good hay with regular and liberal feeds of grain;" while Prof. Cyrus Thomas, in his official reports on the agricultural resources of the Territories, declares,

"without injustice to any other part of the west, it may be truly said of Montana that it is *the best grazing section of the Rocky Mountain region.*"

DIFFERENT KINDS OF GRASSES.

There are several different varieties of bunch grass, two of which are the most popular and generally known; one with a blade that resembles blue-grass, and stems which run up in a cluster, bearing seed much in the same manner that blue-grass does, except that it does not form a tuft, but grows in bunches, and is found upon the high, rolling bench-lands, parks and mountains. The other kind grows more frequently upon the first bench, next to the river bottoms; the blade is sharp, the heads all turn to one side, and from the broad boot on the seed-stalk it is often called "flag-grass." As to quantity per acre, there is but little or no difference. The latter is usually preferable for cattle, but the former is thought to be best for sheep.

These grasses start forth in early spring, and grow very rapidly. If there have been heavy snows during the winter, and the ground is well saturated with water, or if there are frequent rain or snow storms as the spring opens, the crop of bunch grass is very large. In ordinary springs the grass is headed out by the first of June, and the boundless prairies and hills are beautiful as a waving field of grain. The height of the grass is usually from twelve to eighteen inches, with blades from eight to twelve inches long, yet under very favorable circumstances it grows much taller. I have seen miles and miles of bench-lands along the mountain slopes which were one vast sea of bunch grass fully thirty inches high, and thick enough to mow. By the last of June the heads ripen, and in ordinary seasons the blades are all nicely cured by the middle of July, and the whole landscape is brown as a field of grain ready for the sickle, and would burn if set on fire. The cured grass retains its nutriment all winter, from the fact that there are no drenching rains in the fall to bleach it, the light snows which come in early winter, and melt off soon, only serve to moisten it and make it more palatable.

Western men differ considerably as to what variety of grass is buffalo grass. A short, curly grass, which makes a considerable tuft, is generally known as buffalo grass. It rare-

ly gets over three or four inches in length, and grows on bench lands and along the creek bottoms where the soil is dry. Two varieties of sage—one so black that it looks as if it had passed through fire, and the other almost white, growing from six to twelve inches high—are found in different localities, and are among the most valuable of the native herbs for winter grazing. In most other Rocky Mountain regions, wild rye is found growing luxuriantly in the lowlands, or along water courses, while in Montana we find patches of it near mountain summits so tall that a horse could hide himself in it.

CATTLE GROWING.

Cattle on these vast free ranges are especially self-reliant, and if left to take care of themselves, winter and summer, will, as a rule, grow while their owner sleeps, and come off the pasture, at any time except in early spring, in good condition for market. For a dozen years previous to 1880, the average loss of cattle from storms was reckoned at not over 2 per cent per annum. In 1880 the percentage was increased to an average throughout the Territory of 7 or 8 per cent, and from present indications the loss this winter (1880-'81) will nearly, if not quite, equal that of last. Of the thousands of head of oxen which are worked hard by different freighting companies from May until December and are then turned out poor to forage for themselves until their work again commences in the spring, none have ever tasted hay or grain. These generally "come up smiling" in good condition for work. Of the 275,000 stock cattle in Montana, probably not a thousand have ever tasted hay or grain, or have seen a shed. In justice to Montana, it should be added that the heavy losses of 1879-80, were mostly of cattle driven from Oregon just previous to winter, and too poor and weak to withstand even an ordinary degree of cold.

The expense of caring for cattle or horses in herds of 1,000 or more is about 75 cents per head. Adding taxes and we have the total cost of producing a \$30 steer in Montana about \$3.50. Men who five to ten years ago engaged in the business on a small capital find themselves rich. The consequence is that about every business man in Helena is putting money into cattle, sheep or horses. I am informed by Helena bankers that over \$200,000 have been invested by citizens of



FORTNEEF CANON, ALONG THE UNION PACIFIC ROUTE INTO MONTANA.

that town in cattle alone in the last six months. Some 60,000 cattle and 100,000 sheep have been driven from Oregon and Washington to the Montana ranges this season, nearly all purchases of Montana business men. All figure on a profit of from 25 to 35 per cent. per annum.

Stock cattle, all ages and sexes, sell in Montana at an average of \$18.50 per head, or they can be purchased in Oregon at \$10.50. A start can therefore be made on less capital by driving from Oregon, but the most careful breeders dislike running the risk of getting Oregon cattle through safely the first winter, the drive always bringing them to the Montana range late in the fall and poor. In making purchases for stocking a ranch a cow and calf would count as one, a yearling one, two-year-old one, and sometimes in making large purchases three-year-olds are included, and the whole cost from \$14 to \$18.50 a head. If there were many of the three-year-olds this last price would be demanded. Until the country is thoroughly stocked, which will be several years yet, no money is needed for a ranch. Improvements usually consist of rough log huts and corrals, which for, say 1,000 cattle, need not cost over \$250 if the owner relies largely on his own muscle. The additional expense is the cost of living, if the owner does his own herding, and this will vary from \$250 to \$490 a year. If a herder is employed he receives about \$40 per month and board.

I have numerous statements of stockmen who commenced four or five years ago with from 100 to 200 cows, whose herds are now worth \$8,000 to \$15,000 each, and of "capitalists" who show a profit of \$45,000 to \$60,000 from investments of \$20,000 and \$25,000 five or six years ago. Probably the most successful of Montana's cattle men is Con. Kohrs, of Deer Lodge, who commenced on a small capital some twelve years ago. He paid \$50 per head for breeding cows, and to enlarge his business from time to time since he has often borrowed money at 2 per cent. per month interest. He now owns some 10,000 head and he markets \$40,000 worth of beevcs annually.

A large and increasing percentage of the cattle of Montana are owned by persons who do not manage them themselves, and some of whom do not reside in this Territory. Nearly all the leading merchants and bankers of Helena are

interested in bands of stock. A man who desires to invest in stock, and who has not the time nor inclination to attend to the business himself, takes as an associate some man of experience and integrity but destitute of capital, and gives him entire charge of the herd. This man selects the range, moves the animals when necessary, attends to the rounding up, and drives those that are sold to the place of delivery, paying all expenses and being entirely responsible for the management of the business. For this he receives one-half of the increase of the herd, the man who furnishes the capital taking the other half. The returns which capitalists obtain on their money invested on this plan in a herd of cattle is never less than 15 per cent. per annum. A young man without capital five years ago agreed to care for the herd of D. G. Flurry, Sun River Valley, for one-fifth the increase. He can now get \$25,000 for his share, or \$5,000 per year for his work. There are many similar experiences which can be repeated by the man without much money, but a decided willingness for work and a determination to brave discomfort and a total separation from his wonted society for a few years.

Concerning this almost universal experience, and the chances for duplicating it in future, Mr. S. T. Hauser, president of the First National Bank of Helena, in an interview which I had with him recently, said:

"Four or five years ago, if a man came here to borrow money to put into a band of cattle or sheep, we would have laughed at him. Now we are doing business with a hundred or more stockmen and are glad to loan them money about as quick as we know they have stock and are inclined to pay honest debts. We loan at $1\frac{1}{2}$ and 2 per cent. a month interest and we know their profits are often larger than ours. We know all a man has to do is to brand his cattle and go to sleep; he needn't wake up for a year and still his ability to pay will be unquestioned. Of probably a hundred men who borrow money here at these high rates of interest to go into the cattle business, we know of none who are not on a short and sure road to fortune. Many of these, too, bought cattle when they were worth double what they are now, and consequently did not have as good a show as a man would who buys now. There was Con Kohrs and Will Swett who had to pay from \$35 to \$50 per head for their breeding cattle, while now they

can buy at \$15 to \$18. But both are rich—Kohrs has some 12,000 head and has sold thousands of dollars' worth. Now there is much more show for a poor man. The business certainly beats 2 per cent per month compounded. I suppose people of the east will call us all crazy for making such statements, but we can't help that. These are genuine facts and experiences. A few days ago a young man came into the bank and passed over \$30,000 as a deposit. He asked me whether I remembered him, but I couldn't remember his face. He said eight years ago he had tried to get some sheep from my brother on shares, or buy them on time. But brother wouldn't trade. He had only \$250 in the world and put it in cows. Subsequently he borrowed a little more at 1½ per cent. He has just sold his herd and has \$30,000 clear money! Room? Why, we have hardly more than a cow for every square mile of pasture in the Territory, and you can ride a whole day over some of our best ranges and hardly see an animal. Risk? there is almost none. We have passed through the worst winter known in the country for 20 years—in fact, trees many years old were frozen that winter, and the loss was less than 2 per cent of all cattle in Montana. Flurry got here from Texas with his cattle very poor, just in time to go into that terrible winter. Remember his cattle were used to a warm climate, were not acclimated, poor, etc., but they came out in good shape with a loss of 2 per cent. I. G. Baker & Co., in figuring on a large contract for transportation from Ft. Benton, 400 miles north into the British Possessions, calculated upon losing all their work cattle and left a good margin accordingly. Their trains got up to the British posts, on the Saskatchewan, 500 miles north of here, about Christmas, the oxen having no feed but grass grazed by the way and being very poor. They were turned out to care for themselves, in that far northern country, and in spring were found fat, thus making a fine speculation on the contract.

"There will be some 30,000 head exported this year and this is just the beginning, for our largest dealers have only been in business a few years, so that the three and four-year-old cattle until recently have been very scarce. Next year these exportations must be tripled or quadrupled, and so on in future. We who had a little money a dozen years ago



ALBUQUERQUE LAKE.

were short-sighted not to take hold of the stock business, but are a good deal worse if we don't take hold now.

"We export 1,300,000 pounds of wool this year—a small item, of course, but remember that five years ago we had barely commenced wool-growing and not 1,000,000 pounds were exported. No money, comparatively, has been invested in our mines. They have had to pay for themselves in most cases or were deserted, no matter how good the prospects. See the capital which has always poured into California, Colorado and Nevada. It cannot be said of Montana as it has been of those sections, that a dollar has been put into the ground for every dollar taken out."

The customary way of managing a herd of cattle in Montana is simply to brand them and turn them out upon the range. Some stock owners give no more attention to their herds until the following spring, when a few extra men are employed to "round up" (gather together) the animals, brand the calves, select those they intend to sell, and turn the remainder out again. Under such careless management, of course, a few must stray away or are stolen. The more careful cattle men employ one man for every 1,500 or 2,000 head of cattle, whose duty it is to ride about the outskirts of the range, follow any trails leading away and drive the cattle back, and to go among neighboring herds looking for stray animals and drive them home. There are plenty of buyers on hand during the summer for all steers that may be ready for market, and the stock men who only turn off a few hundred head each season generally sell to them outright for cash or combine with others and drive to the railroad. Four-year-old steers readily command from \$24 to \$28 per head. The principal route to market is that leading down the Yellowstone to Fort Custer; thence to Forts McKinney, Reno and Fetterman; and forward from the latter named post to Pine Bluffs, a station fifty miles east of Cheyenne on the Union Pacific Railway. The road furnishes an abundance of excellent grass, and plenty of good water. The cattle reach the railroad in fine condition, and are shipped to Chicago, where they usually land in October or November. The drive from Sun River or other prominent valleys to the railroad occupies about two months.

To make some of the foregoing statements more plain,

and to show that the claims of large profits are well based, I will submit several statements of accounts taken from books of Montana cattle men. The first is an exhibit of the business of one firm, (who desire to show how money can be made on capital borrowed at an interest of 2 per cent per month), for six years. It shows the purchase of 1,000 two-year-old heifers, to commence with, costing \$13,500, the yearly increase, interest on investment at 2 per cent per month, expense each year, and profit at the termination of the six years:

YEAR.	Breed- ers.	In- crease.	H'fers.	Steers.	Invest- ment.	Int'rest 2 per c't.	Ex- penses.	End of Year.
1st Year.....	1000	800	400	400	\$13,500	\$ 3,240	\$ 1,800	...1st Year
2d "	1000	800	400	400	18,650	4,476	2,700	...2d "
3d "	1400	1120	560	560	26,500	6,360	5,400	...3d "
4th "	1800	1140	770	770	38,600	9,264	5,400	...4th "
5th "	2360	2100	1050	1050	53,265	12,783	5,400	...5th "
6th "	3133	2500	1250	1250	61,000	12,390	6,000	...6th "

Cr. 5th year by 400 head 4 year old steers sold at \$25.....\$ 10,000

Cr. 6th year by 400 head 4 year old steers sold at \$25..... 10,000

Herd of 9,060 head of cattle, at end of six years at \$13..... 117,780

Total receipts.....\$137,780

Original investment.....\$13,500

Interest for six years on accumulated capital, 2 per

cent per month..... 45,507

Expenses for six years..... 27,700

Total investment and expense account, \$ 86,707

Profit.....\$ 51,073

The herd at the end of six years is composed of 3,130 cows, 2,100 yearlings, 2,500 calves, 560 3-year-old steers, and 770 2-year-old steers; total, 9,060. But from this must be subtracted an average annual loss of cattle of 2 per cent, from severe weather and other causes, and more conservative breeders claim that 80 per cent of the number of cows is too high an estimate for average annual increase.

The following table has been prepared by an eminent and practical stock grower, at the instance of Col. A. J. Vail, of Helena, one of the most extensive cattle growers of the Yellowstone Valley. The investment begins with 1,000 heifers, one year and over, and contemplates the regular exchange of the steer calves for heifers each season, which can readily be done. Interest is figured at 8 per cent annually, the loss at 2

per cent, and the increase at 80 per cent. Business to continue for twelve years.

YEAR.	THE FIGURES OPPOSITE EACH YEAR SHOW THE NUMBERS OF CATTLE OF THE VARIOUS AGES COMPOSING THE HERD FOR THAT YEAR.													AGGREGATE NO.	EXPENSES.
	1,000	800	700	600	500	400	300	200	100	50	25	12	6		
1866	1,000													1,000	\$ 12,330
1867	980	784												1,764	15,236
1868	960	768	768											2,440	18,374
1869	940	752	753	1,354										3,809	22,403
1870	920	736	738	1,329	1,910									5,025	28,315
1871	901	715	723	1,300	1,872	2,911								8,422	32,265
1872	883	701	709	1,274	1,835	2,855	4,322							12,577	43,925
1873	865	687	685	1,249	1,798	2,790	4,230	6,472						18,768	59,500
1874	848	673	681	1,214	1,762	2,740	4,151	6,333	9,655					28,057	81,124
1875	830	660	687	1,180	1,727	2,685	4,068	6,206	9,482	14,410				41,905	114,913
1876	813	647	654	1,166	1,692	2,621	3,987	6,082	9,273	14,122	21,682			62,689	163,756
1877	797	634	641	1,143	1,658	2,577	3,806	5,960	9,068	13,840	21,169	32,179		93,202	235,600
1878	781	620	628	1,120	1,625	2,525	3,730	5,141	8,887	13,561	20,775	31,535	48,074	139,172	315,368

To briefly recapitulate: One thousand heifers, one year old and over, at \$8 per head, \$8,000; two per cent per annum for deaths taken off, and eighty per cent per annum, increase for twelve years, make 93,202 head; at \$15 each, throwing in the calves, \$1,398,030, less \$315,368, cost and expenses—\$1,082,662. The increase is astonishing truly and a study of the figures is enough to allure almost anyone to a closer acquaintance with the business. It is also interesting to know just what the items of expense are. Following is a statement of the cost of starting with such a herd, and the expense of its care for the first year.

1,000 heifers, 1 year and over, \$8.....	\$8,000
40 Short-horn bulls, \$30 each.....	1,200
12 horses at \$50 each.....	600
1 pair large horses for wagon, \$100.....	200
1 wagon and harness.....	150
3 men at \$600 per year.....	1,800
6 saddles, bridles, etc., \$10 each.....	60
2 shanties at \$50 each.....	100
Branding irons and recording.....	50
Cooking utensils.....	50
3 men 20 days each at \$2 per day, to brand, etc.....	120
Total.....	\$12,330

A further idea of the profits of cattle raising in Montana may be had from these estimates, which are not far from being correct: The entire herds on the Musselshell range last season were estimated to be worth \$100,000, that is, that amount of money would have purchased the entire stock. This summer



Castle Geyser & Fire Basin

it is estimated this valley will cash its beef for \$75,000; next season it will cash it at no less than \$100,000, and the third year \$150,000 would not be a big estimate for the beef sales. Ten men and 100 horses, it is estimated are all that would be required to attend them, and eight of the men would not be needed more than six months each year.

But by far the largest number of readers of this little volume will be the class who can command only \$1,000 to \$3,000 each, and I am almost daily asked can such start in the cattle business in Montana with a fair show for success. With a year's preliminary study in the business (in the employment of any old cattle man in Montana or Wyoming), and a willingness to do his own work rather than hire expensive help, a man investing, say \$2,000, in young cattle, can certainly acquire a competency in eight or ten years at most. Suppose, in 1881, he invests \$1,200 of this in 150 yearling heifers, \$100 in 12 yearling steers, \$100 in young bulls, and \$200 in ranch improvements. If he is economical, will stay on his ranch and attend to his own business, he can easily live on \$300 per year. He then has his living provided for two years, at the end of which time he can sell ten 3-year-old steers for \$225, and can, from time to time, sell a few of his young steers (the increase) to keep up unlooked for expenses. Many heifers will calve when two years old, but we will only commence crediting them with 80 per cent increase at three years. In 1883

the increase will be 120 head; in 1884, 120; in 1885, 120; in 1886, it will be 168; in 1887, 216 head, and so on. He will in 1887 have been in the business six years and his herd of 150 will have increased to 894, less an annual loss of 2 per cent and necessary sales to keep up expenses which would leave say 850 cattle, old and young, worth an average of \$16 per head or \$12,800. His progress would then only really become noticeable, and at the end of the next four years, with careful management and no extraordinary loss, he could be worth anywhere from \$30,000 to \$40,000, without considering the increased value of his ranch property, which at the beginning was obtained for almost nothing. But in starting into the cattle business on a small scale much more rapid progress can be made by utilizing most of the cows in

DAIRYING.

There are probably more and better openings for dairying in Montana than for any other branch of rural industry. The cattle king, with his thousands of cows, often either buys his butter or does without, and the denizens of cities, towns and mining camps now look for the butter famine as regularly as winter comes. In midwinter a prime article of ranch butter is worth 50 to 60 cents per pound, and it will average 35 or 40 the year round. Climate, pasturage and water combine to render dairying there a very satisfactory pursuit. Cows cost not a cent for their keep, and the product of butter or cheese is a clear gain, the increase in stock paying all expenses. Good dairy cows can be purchased at \$35 per head. The family of small capital casting around for a location can do no better than go to one of the beautiful valleys of Montana, get a few cows and chickens and take hold earnestly of dairying and poultry raising.

I am personally acquainted with several Montana dairymen who commenced four or five years ago with rented cows, and not a dollar of capital. They are to-day the possessors of fine herds, good ranches, and worth from \$5,000 to \$10,000 each—all made by good honest labor in the corral and milk house. Among these is Mr. Wm. Mulvey, an intelligent Irishman who informs me that he went in debt for a few cows in 1865, and located on a ranch in Boulder Valley, 50 miles south of Helena. He has since then sold from \$2,500 to \$4,000 worth

of butter per season—about \$35,000 worth in all—and has accumulated such a nice herd of stock that he don't care to dairy any longer. He has of late milked 35 cows six months in the year, and says an industrious man and wife, with a boy or girl to help, can clear \$2,500 from 30 cows, every season, by working half the year. L. O. Proctor, a practical dairyman from Ohio's "Western Reserve," who went to Smith River Valley, 70 miles east of Helena, without a dollar, in 1874, rented 20 cows, was soon enabled to buy them and more, and now sells 10,000 pounds of cheese per season, at an average of 20 cents per pound. He has accumulated \$7,000 worth of property, and pronounces Montana, "the best dairy country in the world."

The following is the first year's showing made by a dairyman who makes no effort to get into the stock business, but is simply following dairying from year to year and reinvesting his profits in milch cows.

INVESTMENT AND EXPENSES.

Ranch site, buildings and corral,.....	\$1,000
Fifty American cows at \$35 per head and two sires at \$75,.....	1,900
Two assistants, wages, and board 8 months,.....	940
Carrying product to market and minor expenses,.....	200
Total,	<u>\$4,040</u>

PRODUCT.

14,000 pounds of butter sold at 40 cents per pound,.....	\$5,600
Increase of 34 calves sold at \$8,.....	272
Total,	<u>\$5,872</u>
Less investment and expenses,.....	4,040
Net Profit,.....	<u>\$1,832</u>

To get back the original capital and make a neat years salary besides, during the first year, may strike the reader as an exceptional venture, but the experience is within the reach of every man who can combine good business tact and a knowledge of the industry with the same amount of capital in Montana. Less capital will bring corresponding results.

Dairy cows cost about \$35 per head, or they can be rented by giving the owner the increase and one-fourth of the butter or cheese manufactured. Of course, dairying is generally carried on only during the seven or eight months of spring and summer, as few provide even so much as hay for cold weather, and when winter comes, the cows have about enough to do to

keep in good flesh. The number of cows milked in Montana is placed at 11,000, and the product of butter and cheese in 1880 at 1,200,000 pounds.

SHEEP AND HORSES.

The rapidity with which Montana has become the land of the golden fleece is an open secret of the cause of much of her thrift. Previous to 1873 there were probably not a thousand sheep in the Territory. There are now over 300,000 head, and the value of the sheep and amount of wool clip per head has been steadily increasing, and nearly all the flocks are now either high grade Merino or Cotswold. Samples of wool sent from Gallatin county flocks the past season to Boston, for classification, were by the best judges pronounced the finest ever received from the Rocky Mountains—second only to the very highest classes of wool raised in the United States. Fleeces average six pounds, and the mutton commonly served in Montana is the best I have ever tasted. Wool sells at from 25 to 30 cents per pound.

Sheep receive a little more attention than cattle, being sometimes provided with sheds in winter, but only at rare intervals receiving hay or other food, save that gathered by themselves. The most prominent wool growers put up hay regularly every season, in anticipation of "that bad winter" which is yet to appear. Cook Bros., of Smith River Valley, who own 20,000 sheep, have followed this plan season after season for seven years, and up to last winter they had only fed their band *five days during the whole period*—their decaying haystacks all over their meadows pointing to the moral most forcibly. The winter of 1879 and 1880 was severe enough to consume much of this surplus, and to confirm their belief that an exceptional bad winter might necessitate feeding a month or two. Even if the hay should be fed a month or two in winter, it costs next to nothing. Prominent wool growers state that the loss of sheep in Montana will average as great in summer as in winter, on account of their inordinate gorging of the rich grasses. It needs no argument to prove that these high, dry localities in the northwest are the natural habitat of the sheep. It is next to impossible to originate disease among sheep here, where they are out in the sunshine every day in the year, where there is no moisture to continually

saturate the hoof and produce foot-rot, or to saturate the fleece and invite scab and other skin diseases; browsing where it is never muddy, the fleeces never get dirty or matted, and while rarely washed before shearing, the wool is as clean as that which is washed in most of the states. It is noticed that a much thicker and better quality of wool is produced from sheep which are driven here from other territories a year after the animal has reached the Montana pasture than was clipped four or five hundred miles farther south. The hair almost entirely disappears, and is supplanted by a clean, long and heavy coat of excellent fibre.



ALONG THE GRAND CANON, YELLOWSTONE PARK.

The profits in wool-growing are by many placed higher than in cattle-growing, and even the more conservative breeders figure up a net profit of from 25 to 35 per centum per annum on all capital invested. All agree that the wool clip will pay every item of expense, leaving the increase a clear gain. The loss from all causes is estimated at from 2 to 3 per cent. The annual increase of flocks, composed of all ages and sexes, is placed at 48 per cent, and the increase of 1,000 ewes, two years old and upwards, will range from 80 to 115 per cent—probably averaging 90 per cent. Sheep sell readily at from \$3 to \$4 per head. When a lamb is dropped it is estimated at \$2, and when it is three months old it is worth \$2.50 to \$3. A herder easily cares for 2,000 head.

Sheep-raising is emphatically the poor man's industry, for, with a free range, timber at hand for construction of sheds and corrals, and in fact no capital needed for running expenses after the first season, he is master of the situation if he can command any sum from \$500 upward for the purchase of a small flock. Better still is the plan of leasing flocks, by which the trusty workingman, without a dollar, can secure a flock of from 1,000 to 2,000 head for, say five years, giving the owner one-half the increase and wool and returning the original number of sheep at the termination of the lease. Messrs. Davenport, Ray & Co., a Sun River firm of my acquaintance, leased 1,000 ewes to a man who possessed no capital but his muscle in 1875, the lease running four years. In 1876 the increase was 1,050; in 1877, 1,250; in 1878, 1,400, and in 1879, 2,300; total increase, 6,000. In July, 1876, the owners received \$650 for their half of the wool-clip; in 1877, \$1,000; in 1878, \$1,100, and in 1879, \$2,250. The owner thus received in four years \$5,000 worth of wool and 3,000 sheep, worth at least \$10,000, or a return in four years of \$15,000 from an investment of \$4,000. The renter, who had not a dollar at the start, has now a \$10,000 flock of sheep, a good ranch and some cash besides. The recent experience of Governor Potts is more seductive still. He invested \$12,000 in a flock of 4,000 sheep, held them long enough to secure one crop of wool and a year's increase, which was 2,700 head, sold out and exhibited a return of nearly \$10,000 inside the twelve months.

As a test of the Montana climate, I will add that in the extremely cold winter of 1874-'5 Davenport, Ray & Co., wintered 3,500 sheep on Sun River without any sheds. Although mercury at one time indicated a temperature of 40° below zero, they lost only 26 head out of the 3,500, and 14 of these were killed by a \$500 shepherd dog in his vigorous efforts at keeping the band together in a severe storm. During this unusually severe winter never did more than 140 head—a band of old and infirm sheep—ever receive hay at one time, the flock keeping fat by their daily browsing on the range.

Following is a statement, furnished me by a prominent Helena firm, of the profits realized from an investment in 1,000 ewes for a term of five years:

RECEIPTS.

YEAR.	Ewes.	Increase.	Ewes.	Wethers.	Wool Crop.
	1,000				
1st Year.....	1,000	700	350	350	\$ 1,000
2d "	1,175	822	411	411	1,700
3d "	1,555	1,088	544	544	2,522
4th "	2,033	1,423	711	711	3,710
5th "	2,660	1,862	931	931	5,032
		5,895	2,947	2,947	\$13,964

Total wool crop.....	\$13,964
5,895 sheep at \$3 per head.....	17,685
30 Merino bucks at \$25.....	750
Interest on cash obtained for wool.	3,684

Total receipts.....\$36,083

INVESTMENT AND EXPENSE.

1,000 ewes at \$3 per head.....	\$3,000
Cabin, sheds and canvas.....	800
32 Merino bucks at \$50.....	1,600
Herder, wages and board.....	2,600
Taxes and minor expenses.....	1,000
Interest 5 years, 1 per cent per month, on original investment.....	2,100
	11,100

Profit.....\$24,983

The increase is only fixed at 70 per cent, whereas most breeders claim it will average 90 per cent. There is thus an ample margin left for losses. It has been found, upon careful investigation, that the annual cost of keeping sheep in the Middle States is \$2.65 per head. Even admitting that they should be fed one month each winter in Montana we find a wonderful advantage in favor of the latter, and the figures show, in a nutshell, why wool-growing is so enormously profitable in the northwest. Take a flock of 3,000 for instance, which one herder can easily handle:

3,000 sheep in the East at \$2.65 per head. .	\$7,950
3,000 sheep in Montana; one herder at \$50	
per month including board.	\$600
100 tons of hay, during severe storm, at \$5	
per ton	\$500
	\$1,100

Difference in favor of Montana \$6,850

It also should be noticed that Eastern sheep are, in summer, pastured on land worth from \$40 to \$100 per acre, while the Montana pasture field costs absolutely nothing.

Horses, more hardy than either sheep or cattle, because

they will paw away the deepest snows that may cover their pasturage, are also being introduced in large numbers despite the large amount of capital required for a respectable start. The average increase of colts is 80 per cent of the mares. No hay or grain is ever fed except to the thoroughbred leaders of the herds, of which there are now quite a large showing. Governor Potts and others have recently imported car-loads of the finest stallions and brood-mares money would buy in Kentucky and other Eastern States. However, the foundation of most of the horses are half-breed Indian or "bronco" stock, which can be bought at from \$30 to \$50 per head. There are some 45,000 of these in the Territory. Nelson Storey, a banker of Bozeman, placed 200 mares on his ranch, in the Yellowstone valley, about eight years ago, and now has a herd of 1,500, worth on an average \$75 per head, besides having sold enough to pay all expenses. A Madison Valley ranchman has also operated on nearly as large a scale with about the same result. These gentlemen introduced good blooded sires at the start, thus much increasing the value of the progeny.

What are wanted in Montana are good draught horses, and the market for such would be limitless, at paying prices. Suppose a man, probably in connection with some other business, such as sheep-raising or raising grain, to buy 50 brood mares (half-breed), which he can procure at \$30 each, and one draught stallion, costing \$1,000. He will thus have invested \$2,500. He need be at no expense for feeding or stabling, except in the case of the stallion, and at very little expense for herding, if he gives the business his personal attention. The average of colts is 80 per cent of the mares, so that at the end of the first year he would have 40 colts, worth \$20 each, making \$800, a return of over 30 per cent on his investment. Carry this computation forward, supposing him to sell off his geldings when they were four years old to pay expenses and to buy additional stallions, retaining the mare colts for breeders, and it will be seen that in five years he will have a band worth at least \$10,000.

There are several really fine herds of horses in different parts of the Territory. Mr. W. H. Raymond, of Virginia City, has on "Belmont Park" Ranch, in Sweetwater Valley, Madison county, a herd of nearly 150 brood mares and 11 su-

perb stallions, all from Kentucky — "Gold Dust," "Mambrino," "Belmont," and other noted families. Among these are a number of \$500 mares and a \$1,750 colt. S. S. Harvey, of Clancy, Jefferson county, owns a herd of 50 thoroughbreds, mostly from Kentucky, and some of which cost up in the thousands.

The profits of growing horses and mules seem to be fully as great as any other branch of business, and aside from the depredations of Indians are subjected to as little risks. Horses, like cattle and sheep, grow and multiply upon the Montana ranges without care; in fact, there is less danger of loss in

growing this kind of stock in the winter, should it be very snowy, than any other kind. They will make their own living where cattle would starve. Mules and horses that have been used for freighting all summer are turned loose at the approach of winter, poor and foot sore, to make their own living; and what is remarkable, come out in the spring rested up, recuperated in flesh and ready for the road again. Different horse growers keep large bands and rarely ever see after them except in the breeding season, and seldom meet with loss. It is necessary to get the colts up at weaning time



THE GRAND.

though some do not, but those who do not have more or less loss from the neglect, as mares sometimes fail to wean their colts, and are suckled down poor, and on account of their poverty sometimes lose their next spring's fold. Young horses are always fat.

A late issue of the Montana *Husbandman* remarks: "One would naturally think that in a country like this, where this class of stock is so easily reared, and where men engage in it on such a wholesale scale, that the markets would soon be overdone. Ten years ago there was much said of the profits of this business, but all agreed that it would soon be overdone, but to their surprise they find that there is a better demand for good horses now than then. The class of horses has, of course, materially improved, and the prices have advanced proportionately. 'Cow ponies' are plenty, as they always have been, and worth from \$25 to \$60, as ten years ago. But good farm horses are scarce, and are in demand at from \$60 to to \$125. Good roadsters are scarcer still, and sell readily at from \$125 to \$250, and instead of the market being overrun, the demand is increasing more rapidly than the supply. It requires no mathematical skill to figure on the profits."

In the light of the fact that the stock business in Montana is almost entirely the outgrowth of modest beginnings made by a few pioneers only some thirteen years ago, and that home capital only has in most cases been employed, a showing of the growth of the interest almost staggers belief. There were but a few small herds of cattle in the Territory in 1870, probably not over 20,000 head in all, and no record of sheep previous to 1871. Of horses I can obtain no exact figures previous to 1875, although stock men have furnished approximations beginning with 1873. The number of horses in Montana in 1873 is estimated at 15,000, of a value of \$300,000; the present number, estimated from assessment rolls and other authority, will not fall short of 75,000 head, valued at \$2,500,000. Following is a statement of the number of cattle and sheep in the Territory since 1873, with the export of beef and wool:

	<i>Cattle in Montana.</i>	<i>Cattle export.</i>	<i>Sheep in Montana.</i>	<i>Wool clip, pounds.</i>
1873.....	86,944	—	10,597	43,000
1874.....	102,058	3,000	13,947	61,200
1875.....	144,411	5,000	20,720	90,000
1876.....	161,647	6,000	51,558	257,000
1877.....	182,659	10,000	79,288	400,000
1878.....	214,551	22,000	107,261	1,000,000
1879.....	263,788	28,000	188,891	1,200,000
1880.....	274,316	30,000	300,000	1,300,000

The total value of the cattle export in these eight years is placed at \$2,675,000; of the wool export \$1,100,000. The 100,000 sheep brought from other States and Territories this season were generally clipped before starting, which explains the seeming inconsistency in the 1880 wool export.

The income of Montana stock-raisers for the year 1880, including increase of cattle, sheep and horses, and the sales of beef, veal, mutton and wool can be reliably placed at between \$4,500,000 and \$5,000,000. One-half of the sum total is divided between 250 men. As only about twelve hundred men are engaged in stock-raising in the Territory there would be an average income for each of about \$4,000. Eight years ago less than two hundred men monopolized the business, with a total investment of \$950,000 and a total income of \$225,000. In this eighth year of the business the capital invested amounts to \$9,000,000, the income say \$4,750,000 and the fortunate breeders numbering, as already noted, 1,200. Among the largest cattle herds at present are those of Con Kohrs, Sun River, 10,000 head; Clark & Elen, same range, 10,000; Flory & Cox, same range, 10,000; Martin & Meyers, Shields River, 5,000; Davis, Hauser & Co., Musselshell Valley, 10,000, and the Montana Cattle Company, whose cattle range on Sun River, 3,000 head. There are dozens of others, having from 2,000 to 5,000 head. There was probably not one herd of 1,000 cattle in the entire Territory eight years ago. It is generally believed that after next season 100,000 beeves can easily be exported annually, and that the wool clip will in 1882 reach 3,000,000 pounds; here is a business for the railroads in one item of over 50,000 tons annually.

But if a consideration of the progress of eight years marked by isolation, Indian raids and precarious markets strikes one as such a tremendous matter, what would he say to an introduction to the possibilities of the business in the

next eight seasons, with railway communication and peace assured? The 38,000,000 acres of grazing lands in Montana are capable of an annual production of 400,000 cattle and 1,000,000 sheep, and this limit will probably be reached within the next eight or ten years. The value of such production would at a low estimate be \$15,000,000 and the tonnage 250,000 ton per annum. Thousands of square miles of bunch grass lands are still unoccupied, notably in Northern Montana, bordering the Missouri, Sun, Marias, Teton and Milk Rivers, and in Central and Eastern Montana in the Musselshell, Judith, Yellowstone, Powder, Tongue and Big Horn River regions. But even these vast areas are filling up rapidly, not only with herds being driven from adjacent and less desirable Territories but by the herds formerly fattened in the less extensive valleys of Southern and Western Montana—herds that have multiplied so rapidly that they have outgrown ranges only a few years ago thought adequate for almost any probable demand. Ranges near Helena and other towns in this portion of the Territory thus vacated offer room for a good many small herds of say 200 to 500 head each. Another season will witness the reoccupation of all of these.

As all the ranges become pretty well filled, Montanians will turn their attention more to the production of blooded stock. Indeed, blooded stock breeding is already one of the great interests of the Territory. With the healthiest climate for stock in the world, the purest water and the best natural feed, it can just as well produce a steer that will sell for \$40, as to produce one that will sell for \$25, or a sheep whose fleece will sell for \$3 instead of \$1.50; or a roadster and draught horse that will sell for \$200 in place of the thousand "broncos" that go begging at \$35. Indeed, besides its fine horses already noted, it has more and larger herds of Short-Horn and Jersey cattle and more Cotswold and Merino sheep than any of our territories. Messrs. Poindexter & Orr, of Beaverhead Valley, have a herd of thoroughbred Short-Horns worth \$20,000; Messrs. Gregory & Co., of Home Park Ranch, Ruby Valley, also have a large herd of this breed, and Alex. Metzel, Esq., of the same locality has about seventy-five pedigreed Short-Horns of the finest strains of blood. Mr. Len. Lewis, of Smith River Valley, exhibited some twenty Jersey cattle at a recent fair at Helena which were the admiration of all

connoisseurs. In Gallatin county Hon. Caldwell Edwards has a flock of some 600 thoroughbred Merinos, many of which are high priced sheep from the best flocks of Vermont and other states. Cook Bros., of Smith River Valley have many fine Cotswolds from the best flocks in the United States.* In fact there are some twenty firms paying almost exclusive attention to the breeding of blooded stock, and it is astonishing to note the progress thus made in the past four or five years. If the average Montana stock man wants a fine horse he pays a thousand dollars or more for it more freely than we of the "states" would invest one-tenth the amount, and the same applies to his mode of dealing in cattle and sheep. He will have the best if money will get it.

Any of the branches of stock-raising thus briefly outlined present opportunities without end for speedy money-making in Montana. The requisites are in a nutshell, some capital at least, a careful study of the business, and the same attention devoted that would be bestowed



upon any legitimate business venture of equal magnitude. So long as the world pays its greatest tribute to food—to bread and beef—the demand must ever keep its proportion beyond the supply, and these broad pastures and thousand nestling valleys are ready and waiting to respond to the magic touch of labor and capital judiciously applied.



CHAPTER VII.

PICTURESQUE MONTANA—HOT SPRINGS—GAME AND FISH.

ENTERING Montana from the south, via the Utah & Northern Branch of the Union Pacific Railway, the tourist hardly crosses the line ere objects of interest to the purely æsthetic taste plead for attention right and left. Then he may wander all over this marvelously beautiful domain, from the bad land region of the lower Missouri and Yellowstone at the extreme east, to the grandly rugged and often iridescent summits of the Bitter Root range at the western boundary, and, at the close, confess in his bewilderment that nature charmed so irresistibly at different steps, it would be difficult which spot to favor in a second ramble. When, from the slopes of Madison county's "Old Baldy," I looked down upon Ruby Valley, with the golden light of the morning sun creeping down the purple heights of Ruby range, and gradually chasing away the deepest shadows, I mentally ejaculated there could be no such other enrapturing picture in all nature. But a few weeks later I feasted my eyes on Bitter Root Valley, far to the northwest, with its wildly romantic walls lifting snowy summits six thousand feet above my head, its river a glorious mirror of the fields, forests and orchards fringing it, and its golden harvests and pine-embowered homes—*sunset and all*—and, mutable moral that I was, straightway proved treacherous to fair little Ruby. As for the distinctively grand and awe-inspiring, when still a few weeks later I peered into that five-mile throat of granite through which the Missouri seeks egress from mountainland,

or stood enraptured among the clouds of spray at the feet of the great falls of the same noble stream, I could easily forget both Bitter Root and Ruby.

Then, when I add that Montana abounds in hot mineral springs, in many of which I bathed in turn, at each successive ablution vowing that I had never enjoyed such an exhilarating douche before, you can imagine that for the invalid there is here much room—though little necessity—for choice. Every county, almost every valley, of the great Territory presents these healing waters, of virtues unexcelled, as variable in kind as the trees in her forests, and in quantity not equaled anywhere outside the vales of "Wonderland." I found them occasionally utilized, and in a limited way fulfilling the beneficent behests designed, but more often their waters were found wastefully mingling with the pure ice-cold current of neighboring streams, and forever losing their identity during the long journey to the sea.

BEAVER HEAD ROCK AND TWIN FALLS.

Near Lovell's, in Beaver Head Valley, and in full view of the Utah & Northern road, is Beaver Head Rock. It is this quaint landmark which gives river, valley and county their name; and as there is a very good likeness of it in these pages, readers will unite in saying that the title is appropriately bestowed. The rock rises 300 feet above the river, and is so near the perpendicular that a plummet suspended from its summit would drop into the edge of the deep eddy which washes its southern base. The deep eddies at the base of Beaver Head Rock abound in large mountain trout. A short walk up the cañon, bursting from the cliffs by the roadside, is a cluster of warm springs. They throw off a strong stream of water, and, dropping over a ledge some twenty-five feet above the road, form the pretty little Twin Falls, which Montana-bound people admire so much.

A WONDERFUL CAVE,

Twenty miles west of Lovell's, near Argenta, is one of the most interesting caves in the west. Its principal entrance is at the base of an abrupt, heavily timbered mountain, a pretty park-like opening among some towering pines marking the spot. A good carriage-drive leads direct to its mouth,

Passing through a hall-way some twenty feet wide and fifty feet long, cut in solid limestone, the visitor finds himself on a rapid down-grade, leading toward the heart of the mountain, at an angle of 45° . This descent is through a larger chamber, with an arched roof thirty feet high, the roof being studded with stalactites. This glittering canopy fairly dazzles the eye as the torches flash upon it, and presents a weird and beautiful contrast to the sombre walls on either hand or underneath.

After descending some 200 feet at the angle noted above, the cavern becomes more nearly level, and penetrates the mountain for a distance of about 1,200 feet, ranging from five to forty feet in height, and from ten to fifty feet in width. Many subterranean chambers as large as the principal one branch off from it on either side, and are often taken for the main one until an abrupt termination shows the error. At one point a fountain of pure cold water bursts from a bowl in the side wall, looking as if it might have been carved out there by human hands. The crystals from the roof are beautiful souvenirs, and specimens grace several Montana cabinets. Birch and Rattlesnake creeks, dashing down through neighboring ravines, abound in mountain trout, and the vicinity of the cave is the favorite haunt of Beaver Head county hunters. An old resident in the vicinity says he has killed no less than 150 deer within a radius of five miles in the last dozen years.

ATTRACTIONS OF THE RUBY COUNTRY.

Proceeding northward toward Helena, the stage road crosses Madison county, and when readers are told that Madison county boasts three or four valleys as fair as my favorite Ruby, two or three of the grandest mountain ranges in Montana, and no telling how many mountain-locked lakes, beautiful waterfalls, and deep-riven cañons, they will realize that there is also something worth tarrying for here. Ruby range, in Madison county, gets its name from the many beautiful rubies found upon it, and also from the indescribable sunset tints it reflects when seen under the gradually fading light of evening. Silver Springs, near Salisbury in Ruby Valley, are worth visiting. Their tepid waters gush forth from the foot of the bluffs in copious quantities and are gathered in a



PINACLES IN THE GRAND
CANON.

Great Falls of the Yellow-
stone in the distance.

miniature lake. A stream, which turns the wheel for one of the largest flouring mills in Montana, constantly flows from this collection of water, is carried through a ditch one mile and a quarter in length, and does its work in the coldest weather without containing the least particle of ice. The lake appears singularly beautiful in winter when nature is sometimes snow-clad and ice-bound on all sides. The bottom is covered with a thick growth of green verdure, the sky and surrounding objects are delineated beneath the crystal surface, while the musquash and articulate animals sport and swim in their warm home as though they enjoyed perpetual summer. High up in Tobacco Root range, overlooking Ruby Valley, is a collection of crystal lakes, the most noted—Silver and Harrison—possessing such rare charms that they are the resort of Montana pleasure-seekers, whose choice is a sufficient testimonial.

In Ruby Valley, sixteen miles southwest of Virginia City, by a fine carriage drive, are Puller's Hot Springs. Patients here were wonderfully enthusiastic at the time of my visit concerning the excellence of the waters and the superiority of Ruby Valley sunshine. The principal pool, which is now converted into a large swimming bath, is fed by some forty springs which boil from beneath. Sulphur and iron strongly predominate in these waters, and some marvelous cures of paralytic cases which they have effected have come under my notice. The temperature is 102°. Adjoining the swimming bath are three or four private plunge baths, each with neatly furnished dressing-room. A few steps from the large pool is a spring throwing off a great volume of water of a temperature of 112°, presenting about the same analysis as the other, while a hundred yards distant is a beautiful fountain of cold water, strongly impregnated with sulphur. A neat little hotel and several cottages afford necessary accommodations for the health-seeker.

MADISON RIVER AND CAÑON.

Another object of more than ordinary interest in southern Montana is Madison River and Cañon. The heavy waters of that great inland sea of bygone ages—which geologists love to tell us about—constantly washing against the Madison range finally forced an opening, carved out a cañon fifteen miles in length, and created an egress for this vast body of

water. There is no trail leading through this narrow defile ; at places the perpendicular cliffs rise to a height of six or seven hundred feet on either side of the stream, thus cutting off any attempt that might be made to walk through it, and the river is lashed into too many whirlpools, and tumbles over too many rapids to admit of passing through in a canoe. Up the valley, hot springs and warm streams are numerous. Prof. Hayden declares that "the valley of the Madison above the cañon is a marvel of picturesque beauty. The descent must be slight, for the river, with the branches which come in on either side, meander through the grassy meadows with the most remarkably sinuous course I have ever seen. The skillful landscape-gardener could gather some useful hints in his art from this region. The channel appears as though it had been cut out by the hand of art, and the little islands in the channel are of every conceivable form and of great beauty. This locality, with such a marvelously beautiful landscape, will ever remain one of the wonders of this region."

DEER LODGE CASCADES, LAKES AND SPRINGS.

Passing northward through the Territory from the present railway terminus the Butte and Deer Lodge stage line crosses Deer Lodge County, within whose confines I believe are more different elements of majesty and beauty in nature than in any area of like extent in Montana. There are several superb peaks, many charming lakes, and dozens of wonderfully pretty water-courses in the county. Powell's Peak, twenty miles west of Deer Lodge City, rising two miles above sea level, is a grand old sentinel, overlooking a region as large as all New England. Seven enchantingly beautiful lakes lie high up among the forests of pine and spruce on the west and south sides of Mount Powell. Three of these lie within 1,500 feet of the mountain crest, their waters continually pouring in a series of glittering cascades over rocks and through rank masses of foliage to the valley, thousands of feet below. Flint Creek Falls, ten miles south of Philipsburg, consist of a cascade of water lashed into snowy foam for a distance of 500 feet down a heavily timbered rocky gorge. Deer Lodge county is quite mountainous and wooded—lovely and romantic to the end, and has its scores of rivers alive with gamy and delicious trout.

The Deer Lodge mineral springs are among the most noted of those now utilized in Montana, and are so well improved, so delightfully situated and so well handled by the skillful physicians in charge—Doctors Mitchell and Mussigbrod—that they are rapidly attaining more than local celebrity. They are located in Deer Lodge Valley, 18 miles above the village of the same name. River, valley and county take their title from the unique geyser cone which marks the location of the springs. The cone, which is well represented in an accompanying illustration, is about 30 feet high, some 50 in diameter at the base, and contains a large warm spring at its apex. The Indians named it "Deer Lodge" because of its resemblance to a wigwam, with the steam rising from it like the smoke from their council fires, and because in those days of the long ago the valley was filled with deer which often congregated in great numbers in the immediate vicinity. There is, moreover, an amusing Indian legend connected with this elevated spring. The pyramid in which it boils so incessantly is said to have sprung up in a single night. A dusky maiden had two lovers who here fought a duel. The wrong one was thrown to the bottom of the cavity; the wild maid sent an appeal to the Great Spirit for a mound to cover her lover, and the first dawn revealed this pyramid, through which all the lariats of the tribe tied in one failed to reach the bottom of the surging waters. Grouped closely about the mound are some 40 other springs, ranging in temperature from 115° to 150°, and whose medicated waters consist principally of iron, soda and iodine.

A few yards below are the hotel and bath-houses and an asylum for the Territorial insane. The improvements have cost some \$30,000, and embrace such essentials as comfortable bath-rooms, dressing-rooms and two nicely furnished buildings which are really cosy homes for those who wish treatment, and the waters have proved especially efficacious in the cure of not only rheumatic and blood diseases but also of mental disorders. There is splendid trout fishing within stone's throw, excellent hunting for large or small game in all directions, and the environs are composed of lovely, fertile valleys and picturesque mountain ranges. A large brick hotel is a contemplated improvement of the future.

SPRINGS IN EDGE OF YELLOWSTONE LAKE.—*Thos. Moran.*

ABOUT HELENA—PRICKLY PEAR CANYON.

From Helena one can go north, south, east or west and find new and rare attractions at every step. The western boundary of Lewis and Clark county, in which Helena is situated, is the divide of the main range of the Rocky Mountains; the eastern is the Missouri river. From the highest peak to the level of the river the difference of altitude must be fully 5,000 feet, and the scenery includes all the varieties of the rugged grandeur of the great rocky barriers and peaceful vales that smile among the lowlands. There are no forests in the valleys, but the mountains are almost gloomy with the dark-browed firs and dense growth of pine.

Four miles west of Helena are some superior mineral

waters. The springs are very hot, affording a luxurious bath, and their water is an excellent tonic when taken internally. Soda and sulphur are predominating constituents of the hot springs, while a large, cold iron spring bursts out near by. The hotel and bathing accommodations are fair, and the drive is an extremely pleasant one. The spot is naturally very attractive.

Eighteen miles north of Helena the Benton stage road enters one of Montana's most noted cañons—that of Little Prickly Pear river. Like most other cañons, the chief beauty of this one is its towering walls, overlooking a dashing mountain torrent whose course is often as crooked as a serpent's trail. Added to grand abruptness of cloud-piercing walls I found much quiet—almost indescribable—beauty in Prickly Pear Cañon during the hazy autumn days. Foliage is plentiful in every cleft of the rocks and on every inch of soil intervening between palisade and river, and never was autumn coloring more brilliant. The shades of carmine and orange, of pink and russet, mingling with the emerald of the pine, spruce and cedar, form bouquets more beautiful than are ever gathered. The rock-work, often rising from 500 to 1,000 feet above, is a slate formation whose coloring alone is beautiful at any season. It deepens from a dull gray to a deep purple, and the masses which have been ground to powder under our feet sometimes look like beds of rich brown and purple ochre. It cost \$50,000 to build eighteen miles of wagon road through this cañon, and the popular prices for tolls in early days were from five to ten dollars each way. Half way through is a beautiful, park-like opening of several thousand acres, where a gentleman named Fergus has one of the finest ranches in the country. Mountain walls fence in his splendid farm on all sides, and ward off outer winds in a most accommodating manner.

WONDERS OF THE UPPER MISSOURI.

In the heart of Montana, four thousand miles from the sea, the Missouri river presents such distinctive features of wildness, grandeur and beauty as are hardly dreamed of by those who witness its murky and treacherous meanderings through the prairie states. I refer especially to the 100-mile stretch of the upper river, taking in the most notable cañons, the Great Falls, and the vast meadowy mesas bordering the

stream after its exit from the mountains. Eighteen miles north of Helena the traveler, in his journey down the river, is suddenly confronted by a lofty spur of the Rockies, which at first view seems to admit of no passage of the mighty stream. Proceeding a few hundred yards farther, however, he finds the current making an abrupt turn, and in an instant he has passed within the portals of the "Gate of the Mountains," a gash rivaling the grandeur of Yellowstone Cañon, and far exceeding in beauty the finest portion of the Hudson Highlands. The whole volume of the river is here for five miles confined to an average width of less than 300 feet, the mountain walls on either side rising perpendicularly for much of the distance over 1,000 feet, and in one or two instances leaning far out over the channel. The upper Missouri, generally so extremely swift, is here as placid as the surface of our most sheltered lakes, constituting an eternal mirror for the overlooking heights, and for the beautiful pines which spring from every crevice. The water is from ten to twenty feet deep throughout the cañon.

The grayish granite walls are turreted and pinnacled in a wonderfully striking manner, and rising so high above their water-washed foundations, with only a dainty arc of heaven's blue visible, fill one with emotions of awe and involuntary dread, akin to those which possessed the first voyagers of the dark river in the Mammoth Cave. Entrances to giant caves, never to be reached except by means of ropes flung over giddy heights, are seen at numerous points. Occasionally blue sky is seen through eyelets carved in the highest towers. These heights are only homes for eagles and mountain sheep. The echoes they give forth make the human voice sound sepulchral, or the discharge of a rifle almost deafening. Large springs occasionally burst from the rocks, and mingle their waters with the great river. An occasional alcove, where a few graceful bunches of willows have scant foothold and shade the stream, tones down the picture to one of rarest beauty. For three miles there is scarcely a single foothold at the water's edge for man or beast. The few natural fissures which do break these almost solid walls are jammed with huge broken pillars, angular rocks, and gigantic slabs of granite, forming natural bridges from brink to brink. Ducks and geese are plentiful along the shaded retreat, and the

translucent water is full of trout, grayling, garfish and suckers. The cove just described abounds in luscious wild raspberries, service berries and currants.

THE "BEAR'S TOOTH"—MYSTERIOUS THUNDER.

Ten miles farther down is Atlantic Cañon, also a gash of great attraction. At the lower end of this, and overlooking the river, is that strangely formed and noted northern landmark, the "Bear's Tooth." Its rocky tusks are plainly visible at Helena, twenty-five miles away, and from that or any other point of view its name seems quite apropos. It rises 2,500 feet above the river. Deep serrations in the gigantic mass of rock composing it rise from base to summit, foretelling some tremendous slides in the near future. One section of the "Tooth," weighing thousands of tons, became detached last spring, thundered down the mountain through the heavy forest which surrounds the base of the tooth proper, and cut a broad roadway, smooth and clean, which looked as if the sickle of a Titan had just completed a very heavy contract. Trees, boulders and underbrush were instantly hurled in shapeless masses to the river 2,500 feet below.

Some forty miles lower down the river, in the vicinity of the "Long Pool," which is a sluggish, lake-like widening of the stream, is the locality in which nearly all the explorers have heard the singular noises which sound like discharges of artillery, and which the savages for more than a century have called "The Mysterious Thunder." Roberts says: "The sound was exactly like the booming of a cannon some miles distant," and Lewis and Clark declared that it "consists of one stroke only or of five or six discharges in quick succession. It is loud and resembles precisely the sound of a six-pound piece of ordnance at a distance of three miles." The sound is generally accounted for in these days by a popular belief in the existence of geysers in some hidden recess in the mountains.

THE THREE CATARACTS OF THE MISSOURI.

One hundred miles from Helena are the first of the Missouri River Falls. The "Great Muddy"—here as clear as crystal—is now making its way through and over the last mountain barriers which separate it from the outer plains.



ARE THEY LOOKING FOR US?

My approach to the different falls was over a grand plateau, whose general elevation is more than 500 feet above the river, and whose surface is one broad, grassy meadow, dotted with numerous lakes. The principal falls, four in number, are scattered along for a distance of twelve miles, and the river may be said to be in a cañon for the entire distance, as all final approaches are made down almost vertical banks of from 200 to 500 feet in height. The first is known as the Black Eagle Falls. It is a vertical plunge of the entire river of twenty-six feet. Here in mid-river is the island upon which that antiquated Rocky Mountain eagle, now a subject of history, is passing away the golden days of a ripe old age in one eternal Fourth of July. The bird is minutely described

by Lewis and Clark as the sole inhabitant of the island in 1805. The same one is noticed, only slightly crippled by age, by General Reynolds, who was on the spot in 1860; and then again by Engineer Roberts, who reports his pinions as badly dilapidated in 1872. Reynolds and Roberts both gave it as their solemn belief that this is the identical island, nest and bird first described by Lewis and Clark nearly seventy-five years ago.

Four miles below the first are the Rainbow Falls, fifty feet in perpendicular descent. They are indeed the most beautiful falls I have ever seen, excepting Niagara alone. The entire river, 1,200 feet wide, here hurls itself over an unbroken rocky rim, as regular in its outline as a work of art, into a vast rock-bound amphitheatre, where the terrific commotion of the water is something awful to witness.

Six miles further down are the "Great Falls," whose descent is ninety feet, and whose tremendous roar is often heard a dozen miles away. The river, here possessing a volume three times greater than that of the Ohio, is narrowed to 300 yards and passes between perpendicular cliffs some 200 feet high. Nearly half the stream next to the right bank descends vertically with such terrific force as to send continuous and always beautiful clouds of spray 200 feet in air. These gorgeous columns are often dissipated into a thousand fantastic shapes by coming into contact with glittering masses of snow-white foam, the whole under the radiance of the sun being enhanced to beauty indescribable by the richest colors of the rainbow. The balance of the river is precipitated over successive ledges of from ten to twenty feet, forming a magnificent prospect of fleecy foam 200 yards in breadth and ninety feet in perpendicular elevation. A vast basin of surging, foaming waters succeed below, their deep green color and fearful commotion betraying a prodigious volume and depth. Hastily making our way down the precipitous ledges to the very edge of the great pool, we were lost in wonder and admiration—a feeling which, when in the lapse of hours it did give way, was succeeded by one which resulted in our landing some splendid trout from more quiet eddies a short distance below. Occasional clumps of pine and cedar among broad, rocky dikes near the river add much to the general picturesqueness below the falls. Beaver, mink and other fur-

bearing animals are plentiful among the spray-dashed rocks, and we found splendid antelope hunting within rifle-shot of the river.

At night we camped on a grassy bench 500 feet above, and commanding a glorious view of falls, rapids and river. The night grew very dark and stormy, and just before seeking my blankets I stepped to the brink and enjoyed a long last look at such a scene as language or brush can never paint. Black as was the night and deep and narrow the cañon, that broad field of spotless foam cast a wonderfully weird light over the rushing waters—a light which, while it fascinated and seemingly bridged the fearful abyss at my feet, yet filled me with a dread undefined.

“BAD LAND” SCENERY.

Similar if not equal in its attractions to the scenery of the Yellowstone, are the twelve miles of Bad Lands on the upper Missouri, a day's steamboat ride below the falls. Huddled together in this small space I will venture to say, are the most remarkable varieties of eroded rocks in the world. There is scarcely a form in architecture or statuary that will not find a semblance here. The rock is of a cadaverous appearance, friable, and has been wrought by the elements into thousands of forms—some resembling infants, others giants, and others, still, churches and castles, as large and as grandly pinnaced as the Milan Cathedral. There is not, says Chief Justice Hosmer, “in the world another bit of scenery affording so much that is novel and striking in appearance. No description worthy of it has ever been written.”

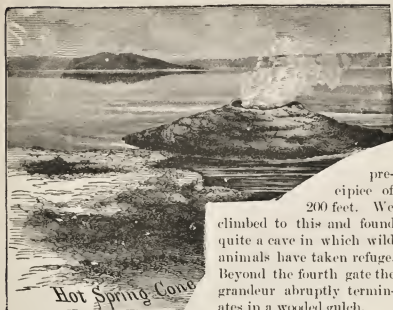
HELL GATE CANON.

A very interesting trip is that eastward from Helena to White Sulphur Springs. You board a fine “Concord” coach (manufactured complete in Helena) at four A. M., rattle across the finest natural road in the world and make the entire journey of seventy-five miles in time for a luxurious bath and a tip-top supper. Your general direction is eastward, first across a twenty mile stretch of the pretty Prickly Pear Valley, in which a prominent engineer has told us there are 96,000 acres of arable lands, then by easy grades over a romantic, timber-clad spur of the Belt range to the noble Missouri, and on past alternate mining enterprises and almost untouched

pasture and farm lands, to Smith River Valley, near the center of which these fountains are located.

Twenty miles east of Helena is the most wonderful defile I have seen in the Rocky Mountain country. It rests here near the well-beaten stage road in comparative obscurity, even with such a thrilling and suggestive title as "Hell Gate Cañon." Approaching it from below through a narrow valley we are suddenly confronted by what at first view seems an unbroken perpendicular reef or wall of rock rising some 350 feet above our pathway. What in the distance seemed a natural gap or pass in the rugged mountain range now presents the aspect of a mighty fortification stretched from summit to summit across the anticipated opening for a distance of 600 feet. But whence the brave little stream which with its song of victory dashes past us from that barrier toward the river, and whither the smooth, solid roadway which makes so confidently for the seemingly impenetrable stronghold? A quick turn in the road reveals a narrow opening to the right, when a second wall rises squarely toward the skies and gives for an instant little hope for further progress. But turning short to the left and advancing between the towering parallel dykes of solid rock some twenty paces, we are led to breathe more easily by finding this immense and wonderfully symmetrical reef rent from base to summit, the great mountain on either side being thus separated by a patch of Heaven's blue only six feet wide.

From this gate we emerge into a beautiful grotto thirty yards wide, extending right and left to the tops of the mountains and bounded opposite the entrance by a rock formation almost identical in appearance with the one we have just passed. The dwarf pine, wild rose and other graceful shrubbery are now found in profusion to tone down the rugged surroundings, while here and there throughout the grotto are giant eruptions of granite which resemble church spires, turrets, or whatever fancy may dictate. Passing through the third gate, whose walls are also only six feet apart and from 300 to 400 feet high, we find at the left the "Devil's Slide" of Weber Cañon, Union Pacific Railway, duplicated on a tremendously large scale. The slide is about 1,000 feet long up the mountain side, is enclosed by walls 200 feet high and as straight as the side of a house, and terminates at the top in a



pre-
cipice of
200 feet. We
climbed to this and found
quite a cave in which wild
animals have taken refuge.
Beyond the fourth gate the
grandeur abruptly termin-
ates in a wooded gulch.

High up in the right-hand wall at the first entrance is the "Devil's Watch Tower," a cave with a bleak, dismal looking opening, which leads no one knows where, but which residents have claimed, was in early days the abiding place of a genuine Rocky Mountain hermit. The outline of a gigantic human head ornaments one of the gates on the right. The road in passing through the gates crosses substantial bridges, while the creek makes its exit underneath. The wild and wonderful gash was many years ago the loop-hole for savage wanderers who dashed to and fro through these mountain ranges, and one of the walls here bears curious hieroglyphics left by them.

WHITE SULPHUR SPRINGS.

The road from the Cañon to White Sulphur Springs lies first over a dozen miles of bench-lands flanking the Missouri Valley, where the shining river, in the midst of meadow and willow, presents a beautiful picture all the way; then for another dozen miles through that golden corridor, Confederate Gulch, and on over a picturesque range into Smith River Valley, in whose upper portion, in a delightfully picturesque region, these springs are located. Coming more to the point,

the pretty little village of White Sulphur Springs is located within stone's throw of the north fork of Smith river and about seventy-five miles east of Helena. Beautiful meadows and verdure-clad slopes stretch off for a dozen miles in nearly all directions and finally lose themselves in pine-decked spurs of surrounding mountain ranges. The springs proper consist of some fifteen large sulphur-scented fountains, the waters ranging in temperature from cold to 126°, and, springing almost from the same basins, a few with waters cold and pure as those which dash from the mountains above. Basins, channels and baths of sulphur waters are coated with great flakes of sulphur, which when dried and ignited, burns very freely. These are classed "saline sulphur waters," of which Prof. Watson, an eminent authority on such matters, has much to say that is favorable. They are especially applicable to the cure of rheumatism and the long train of diseases led by or intimately associated with dyspepsia, gout, liver complaints and impurities of the blood. Patients suffering with such disorders often seem to derive about as much benefit from drinking the waters as from bathing in them. As high as 120 grains of medicated matter are found to the gallon of water.

Among the improvements are two large, new and well appointed hotels, extensive stables, several cottages for guests, two large plunge baths, a number of tub baths, etc. The water is conveyed through pipes from the springs to the several bath-houses, and is so arranged that any desired temperature can be had. Some neatly-furnished sleeping-rooms have baths attached, and are so arranged that invalids can be treated with ease, and without exposure. Dr. William Parberry, the owner and resident physician, possesses a wide reputation as a successful practitioner. The cost of living is as reasonable as in other parts of the country, and, indeed, the place is a home in the true sense of the term. Half a dozen trout streams flow near by, and hunting within half a day's drive is very good.

THE FLATHEAD LAKE REGION.

I have already alluded to the marvelous beauty of Bitter Root Valley scenery, and must add that northwestern Montana is crowded with superb views, and that the mountain

ranges are there more rugged than in the sections thus far described. Flathead Lake is perhaps the most interesting feature here. It is some twenty-eight miles in length, has an average width of ten miles, and is embosomed in one of the loveliest and most fertile countries that the imagination can well picture. Stretched across its center, like a cluster of emeralds, is a chain of beautiful wooded islands, and upon its clear, broad surface wild water-fowl of every description, even to the sea-gulls, disport themselves. Shaded on two sides by towering cliffs, its other extremities lie among peaceful meadows, and lave sloping shores of rare beauty. Around the foot of the lake, and amid the most delightful scenes, is grouped a Flathead Indian settlement, where snug houses, well fenced fields, lowing herds and waving grain give evidence of the rapid advance of those natives in the ways of civilization and thrift. Here it is that the Pend d'Oreille River takes its rise, rushing and leaping through narrow gorges, and again widening out into a broad and placid stream, winding through lovely valleys for hundreds of miles, when it falls into the Pend d'Oreille Lake, a sheet of water larger than the Flathead Lake. Flathead Lake is about 100 miles from the village of Missoula by a good wagon road.

Near St. Ignatius Mission, distant some forty miles from Flathead Lake, are the "Two Sisters," a pair of cascades, for a description of which I gladly draw upon the notes of the lamented and eloquent General Meagher: "Topping a low range of naked hills, we had a sight which made the plastic heart of the writer dilate and beat and bound and burn with rapture. Beyond there, walling up the horizon, were the Rocky Mountains, rearing themselves abruptly from the plains and valleys—no foothills, no great stretches of forest, to detract from the magnificent stature with which they rose and displayed themselves unequivocally, with their bold and broken crests, with their deep and black recesses, with their borders of white cloud in all their massiveness and stern, cold majesty, in the purple light of a midsummer evening, the calmness and the glory of which were in full consonance with the dumb, gigantic features of the scene. Right opposite, leaping and thundering down the wall of a vast amphitheatre that had been scooped out of the mountains, was a torrent, bounding into the chasm from a height of fully two thousand feet, but looking as

though it were a bank of snow lodged in some deep groove, so utterly void of life and voice did it appear in the mute distance. A mass of trees blocked the bottom of the amphitheatre; and following the torrent which escaped from it after that leap of two thousand feet, thousands and tens of thousands of trees seamed the valley with a dark-green belt, all over which the hot sun played in infinite reflections and a haze of splendor. The path to this chasm lies through a dense wood, the beautiful and slender trees in which are closely knitted together with shrubs and briars and snake-like vines; while vast quantities of dead timber and immense rocks, slippery with moss and trickling streams thin and bright as silver threads, enumber the ground, and render it difficult and sore to travel. There are few tracks there of wild animals, and all traces of the human foot are blotted out, so rarely is that solitude visited even by the Indian.

"As we neared the foot of the Elizabeth Cascade—for such was the name given to the headlong torrent—great was our surprise to find another torrent equally precipitous, but still more beautifully fashioned, bounding from the edge of the opposite wall; and as a jutting rock, sceptred with two green trees of exquisite shape and foliage, dispersed its volume, the torrent spread itself into a broad sheet of delicate foam and spray, white and soft, and as full of light and lustre as the finest lace-work the harvest-moon could weave upon calm waters. This cascade is completely hid from view until one stands close under it, and the Fathers of the Mission, strange to say, knew nothing of it until our explorers told them exultingly of their discovery. To this they gave the name of the Alice Cascade, christening them both *The Two Sisters*."

Among other resorts worthy of mention are the Clancy and Pipestone Springs of Jefferson county, and Lund's Hot Springs and Hunter's Hot Springs of Gallatin county, each having fair hotel accommodations, and being convenient to excellent trout streams and hunting grounds. Patients have gone to these with chronic cases, believed to be hopeless, of neuralgia, paralysis, dyspepsia, inflammatory or mercurial rheumatism, or other complaints for which the Arkansas springs are considered a specific, and, after a few months of bathing and drinking, have left completely restored.

CHOICE HUNTING GROUNDS.

It is almost needless to write concerning the game fields of Montana. The finest hunting and fishing in the world is afforded in every nook and corner and sometimes within easy walk of leading towns. During the past winter several of my friends at Helena were often out after deer, and in the course of a day's hunt would kill from two to half a dozen each, almost within sight of the city. A ranchman in Madison Valley this winter shot seven antelope in one day without leaving the doorway of his house. Buffalo, elk, deer, antelope, mountain sheep, bear, moose, and mountain lion, are all found in great plenty in certain haunts, while deer alone are common everywhere. Recently a magnificent cariboo was shot on the Blackfoot range near Deer Lodge. He weighed 1,200 pounds, stood 21 hands high and as indicated by his teeth was 21 years old. From the top of the head to the nose he measured four inches longer than a flour barrel. Such fur-bearing animals as the beaver, otter, mink, fox, muskrat, marten, fisher, and wolf, are taken by the thousand, for, be it remembered, that Montana and the neighboring British Possessions are now furnishing a very large proportion of the furs which reach the prominent marts of the East. In corroboration of this it might be mentioned that the fur shipments from Fort Benton have reached the value of over \$5,000,000, that the trade often runs up to half a million dollars per year, and that 60,000 buffalo robes, with thousands of other skins, were shipped down the Missouri in 1878. After hunting in nearly every Rocky Mountain state and territory I can say that I have enjoyed some of my very best antelope hunting within a day's ride of Helena. Rivers and lakes, nowhere else so numerous, are covered with geese, ducks, and other water-fowl. Of other small game I noticed especially plentiful prairie chickens, grouse, sage-hens, and rabbits.

TROUT FISHING.

As for trout, Montana waters are simply alive with them. During some 3,000 miles of travel in the Territory at different seasons I cannot say that I ever halted two nights where I could not catch a nice mess in an hour. They are so plentiful in different lakes and streams that they are caught by the wagon load for market. The real delicate gamey mountain

trout, weighing from half a pound to two pounds, and the salmon trout, affording just about as much sport and as fine eating, weighing from two to ten pounds, are often found ready to respond to fly or bait in the same waters. Then there are other varieties of fish in some of the streams, although none are so numerous as the trout. Among these are the grayling, garfish, sucker, catfish, and pike. In brief, the angler or huntsman cannot go amiss in Montana, and it would be superfluous for any one to advise a particular locality in the Territory as possessing advantages over others in this respect.

FOR LIFE IN THE OPEN AIR.

In Montana prospecting and any kind of out-door life often lasts for nine months out of the year. Taking into consideration the almost constant supply of delicious brook or salmon trout, and game of every nature, I would name the necessary supplies for, say two men, for the period given, in this wise: Bacon, 150 lbs.; flour, 800; sugar, 200; dried fruits, 100; tea, 10; coffee, 25; oat-meal, 50; corn-meal, 100; rice, 20; potatoes, 400; turnips, 200; onions, 50; soap, 16. New Orleans molasses, butter, condensed milk, etc., *ad lib.* This bill of fare at ruling prices would amount to about \$150 per man for the nine months, and could be appreciably decreased if the partakers were especially fond of the gamey offerings of field, forest and river, and wished to live economically. No country on the globe affords such rare facilities and attractions for out-door life as Montana.



CHAPTER VIII.

MONTANA FOR THE CAPITALISTS OR LABORER—WAGES—LIVING EXPENSES—ROUTES, ETC.

AS already shown, the production of cattle, sheep and horses is the surest avenue to wealth in Montana and the field for such industry is almost beyond compute. Mining, while less certain, in a new region like Montana, presents very strong claims for the attention of those who are willing to run slight risks with the chances of gaining independence in the least possible time. But all will not desire to raise stock or mine. With new trade centers springing up in different locations, the Territory affords fine opportunities for business men of either large or moderate means, who will be content with profits ranging from 15 to 25 per cent interest on capital invested. Money is rarely loaned on any kind of collateral at less than 2 per cent per month interest—the rate ranging from $1\frac{1}{2}$ to 3 per cent. Capital, directed by sagacity and enterprise, possesses great advantages in Montana, as in other new countries more than ordinarily favored by nature. Freightage will be a lucrative pursuit for many years. I know of one ox team (owned by Moore Bros., of Fort Benton), that has earned over \$1,300 during last summer. This was about the cost of the entire outfit, and this winter the oxen are turned out to grass and will cost nothing for keeping. There is scarcely a reputable vocation of any kind, wherein the same capital and good management which insures success in eastern communities, will not yield far greater returns there. Now, above all other periods, is the time to invest money in real estate, mines or live stock, as the rapid extension of the Utah & Northern and Northern Pacific railroads will enhance the value of such property to a degree not now possible to comprehend.

OPPORTUNITIES FOR THE POOR.

Great and undoubted as are the advantages which a union of money and industry possesses, there is no country where unaided muscle, with a plucky purpose and economy,

will reap such a reward as in Montana. There has been a dearth of working men and women for years and even during the dullest season, January, 1881, there has been a loud call through the Territorial press for mechanics, laborers and house servants. By reference to the table of wages given below, it will be seen that salaried people have a vast advantage in the west, where their wages are from 50 to 200 per cent higher than in the east—and where living expenses are not proportionately high. The average illiterate Montana barber or cook gets better wages than the confidential men of an eastern wholesale house, and the roughest laborer in that mountainland has better pay than the skilled mechanic in some of our eastern cities. Young men who will labor, and not insist in hanging around the cities, can make and save—while keeping themselves comfortably and respectably clad—from \$250 to \$400 each per year. Mechanics, of course, can largely increase this sum. Montana has never, like some other western sections, been flooded with labor. The cause is very apparent in its former distance from the railroad, and (until recently) the consequent expense and trouble necessarily incurred in getting there.

AVERAGE WAGES IN MONTANA, JANUARY, 1881.

Bakers, per month and board...	\$ 65.00	Hostlers, per month and board.....	\$45.00
Blacksmiths, per day	4.50	Laundresses " "	35.00
Bookkeepers, per month.....	125.00	Laborers, " "	35.00
Bricklayers, per day	6.50	Lumbermen, " "	55.00
Butchers, per month and board ..	50.00	Machinists, per day	4.50
Brickmakers " "	50.00	Miners, " "	3.50
Carpenters, per day	4.50	Millers, per month and board.....	65.00
First Cook, per month and board	110.00	Milwrights, per day	5.00
Second Cook, " "	55.00	Painters, per day	4.00
Cooks in families " "	35.00	Printers, per week	25.00
Chambermaids " "	30.00	Plasterers, per day	6.00
Clerks, per month.....	90.00	School Teachers, per month.....	80.00
Dressmakers.....	70.00	Servants, per month and board.....	35.00
Drymen per month and board	45.00	Shepherds, " "	40.00
Engineers in mills, per day.....	3.50	Stone Masons, per day.....	6.00
Farm hands, pr month and board	42.50	Teamsters, per month and board	45.00
Harness makers, per day.....	4.50	Waiters, " "	55.00

There is a constant, earnest demand in almost any of these avocations, except for clerks or book-keepers. It should be remarked here that no country in the world offers so many good opportunities for the profitable investment by the laborer of his earnings as Montana—he can, at least, very soon, own a home.

WHAT BECOMES OF WOMEN.

One of the reasons why it is almost impossible to obtain house servants or to crowd the avenues usually open to

women is the determination and facility with which the average bachelor, at the first practicable opportunity, essays matrimony. The early settlers were exclusively men who were hunting for gold, and never expected to remain in the Territory after the mines first discovered failed to pay. When the population began to become permanent, the few who had families sent for them, but the majority were unmarried men. Hitherto Montana has also been so remote that comparatively few women have gone there, and those who have gone have almost invariably been married within a few months after their arrival. The experience of some of the latter have been very amusing. A well-to-do ranchman, of Bitter Root Valley, had engaged, through correspondence, to marry a young lady of a far eastern State. The latter had the courage to make the tedious and dangerous trip by river to Fort Benton, where her affianced was to meet her; but the ranchman, who had calculated upon having a nice home ready for her on the beautiful banks of the Bitter Root, was disappointed in building operations and finally concluded to send a trusty neighbor, with carriages, after the lady, meanwhile hurrying the cottage to completion himself. Before that 250 mile carriage ride was half complete *the escort married his trust*. A lady who took a maid from Chicago to Helena, about four years ago, tells me that the young woman had four proposals of marriage while traveling a week on the stage coach from the nearest railroad point to Helena—part of them from passengers and part from stage drivers. While tarrying with my wife and a young lady, for one night, at a leading hotel of the territory, two years ago, the proprietor, a most worthy and well-to-do gentleman, in all seriousness proposed marriage to the young lady. The latter had just entered Montana with us and had never before heard of her very earnest host. It has come to pass that employers have no idea that a servant will withstand their honest offerings of heart and home more than two or three months. There are very frequent changes among lady teachers because a large proportion of the whole corps in the Territory is married every year. In fact, there are lots of bachelors in Montana and they are a terribly earnest set of fellows.

EXPENSE OF LIVING, COST OF BUILDING MATERIAL, ETC.

Board at first-class hotels in the principal cities is from \$2.50 to \$3.50 per day for transient custom, or from \$12 to \$18 per week. Smaller and very comfortable houses have rates varying from \$7 to \$10 per week. Cottages of four or five rooms rent in Helena or Butte at from \$25 to \$35 per month; at nearly all other points for twenty-five per cent less. Building material, at retail, averages about as follows, at all points: Rough lumber, \$20 to \$25 per thousand feet; dressed and matched flooring, \$40 to \$45; dressed finishing lumber, \$40; lath, \$7 dollars per thousand; shingles, \$4.50; good four panel doors, from \$3.50 to \$5 each, according to size and finish; common sash, glazed and primed, \$3 to \$4.50 each; blinds, \$3 to \$4.50; brick, \$9.50 per thousand at the yards, or \$17 in the wall; lime, 60 cents per bushel. Building hardware same as in Ohio or Illinois, with about three cents per pound added for freight. It is safe to estimate the average expense of living at twenty per cent higher than east of the Missouri. Following were prices current of staple groceries, on February 1st, 1881. These may be fairly called "winter prices," which on many items have always been from 10 to 20 per cent higher in Montana during the winter months than in summer. Supplies of all kinds obtained from the outside are steadily diminishing in cost, as freighting facilities afforded by the extension of the Utah and Northern Branch of the Union Pacific Railway are so appreciably increasing:

Alden Apples, per lb.....	18@	22	Peas, canned.....	25@	35
Apples, dried, per lb.....	14@	16	Pepper, per lb.....	25@	35
Alspice, per lb.....	30@	45	Prunes, per lb.....	10@	20
Blackberries, dried, per lb.....	16@	20	Peaches, dried, per lb.....	15@	18
Cherries, dried, per lb.....	25@	30	Pickles, per gal.....	75@	1.00
Corn, canned.....	25@	35	Raisins, per lb.....		20
Corn Starch, per paper.....	15@	18	Rice, Per lb.....	12@	15
Coffee, Rio, per lb.....	25@	30	Salt, per sack.....	20@	50
Coffee, Java, per lb.....	30@	35	Soup, per lb, common.....	12@	16
Codfish, per lb.....	12@	18	Starch, per lb.....	16@	20
Candles, per lb.....	22@	27	Syrup, per gal.....	1.00@	1.75
Coal Oil, per gal.....	60@	75	Sugar, br'n, New Orleans, pr lb	14@	15
Hominy, per lb.....	8@	10	Sugar, granulated, per lb.....	16@	18
Honey, per lb.....	22@	25	Sugar, A coffee, per lb.....	14@	15
Lard, per lb.....	18@	20	Ten, green, per lb.....	50@	1.25
Molasses, per gal.....	75@	1.50	Ten, black, per lb.....	40@	1.25
Mustard, per lb.....	50@	60	Tomatoes, canned.....	20@	30
Nutmegs, per oz.....	10@	12	Vinegar, per gal.....	80@	1.00
Oysters, canned.....	25@	30	Yeast Powders, per lb.....	40@	60

Good two horse teams can be bought in any of the agricultural districts at from \$150 to \$225; team of two mules, \$200 to \$300; oxen per yoke, \$80 to \$100; saddle horses, \$50 to 75; saddle ponies, \$25 to \$40; pack horses, \$35 to \$50;



PALACE BUTTE, YELLOWSTONE PARK.

livery rates are for double team and carriage, \$9 to \$12 per day; horse and buggy \$6 to \$8; saddle horse, \$2 to \$3; the latter can be hired by the week or month at from 50 cents to \$1.50 per day. Telegraphic rates from Helena to points east of the Missouri River, \$1.50 for ten words.

WHO SHOULD GO TO MONTANA.

It may not be advisable for those advanced in years, or those who are comfortably settled in old and well established communities, to incur the hazards incident to a removal to a new country. And it should be further understood that the wholly destitute will encounter at first greater hardships here than those they seek to escape. Above all things, a man of family should have enough ready money to support his people until he can raise a crop. He will have plenty of time to make enough to pay for his land if he occupies government domain. If the newcomer be young, unmarried, either man or woman, possesses a good constitution and can get into the Territory with enough of this world's goods to last for a few months the opportunities are certainly good. Above all one must bring habits of untiring industry and economy, a determination to succeed at *something* and "physical ability" to carry out such resolves.

BENEFITS OF COLONIZATION.

When several go in one family or colony, it is the best plan to send some of the male members two or three months in advance of the party, who may look around sufficiently to secure a good location, and when the land is located, put up the necessary improvements for the shelter of the rest when they shall arrive. To those who design emigrating in an organized body, including representatives of all the avocations and industries of a full-fledged community, Montana offers special inducements. She includes in her vast extent of surface hundreds of valleys, separated from each other by mountains or, more often, by high, rolling, grass-covered hills or plateaux, where free pasturage in profusion for years to come will hold out extra inducements for stock growing. Entire valleys of unsurpassed richness and beauty are still to be found with but few tenants, while in every considerable river valley abound numerous natural basins, adapted to colonies of any size from tens to hundreds. The increased security,

contentment and stimulus to exertion that attend such schemes of colonization, particularly recommend them to those who think of going to Montana.

Emigrants, tourists and health seekers, one and all, are reminded that upon reaching Montana they will find just one item necessary—*money*. It is useless for any one to load himself down with the common necessities of life, and transport them to such a region as Montana. Outfitting houses of every nature, with such immense stocks of goods as are rarely found in cities of 20,000 inhabitants in the east, are found in all the leading towns. The shipments made by these firms are so large and judiciously handled that no individual can afford to bring articles of ordinary use from distant states.

HOW TO GO TO MONTANA, AND HOW TO TRAVEL WHEN YOU GET THERE.

There is but one all-the-year route to Montana, and that possesses vast advantages over all others *at any season*. It is via the Union Pacific Railway from Omaha, Kansas City or St. Joseph to Ogden, time, a little over two days; thence via the Utah & Northern Branch of the Union Pacific to Dillon, Montana, 350 miles, time, 24 hours; and thence to Virginia, Helena, Butte, Deer Lodge and other central points in Montana, via the Gilmer and Salisbury double daily stage lines, the distance to these averaging 75 miles, and consuming 12 to 24 hours; total time consumed from the Missouri River to these principal Montana cities from three and a half to four and a half days. The Utah & Northern Branch now penetrates some of the best farming, mining and stock raising districts in Montana, and will be completed to Butte and other Montana cities early the coming summer.

FARES AND STAGE TIME.

Following are rates to the most prominent points, in effect February 1st, 1881, with stage time from Dillon, then terminus of the Utah & Northern Branch:

FROM OMAHA TO	1st Class.	2d Class.	Emigrant.	Stage time From Dillon.
Virginia City.....	\$ 95 00	\$ 75 00	\$ 45 00	12 hours.
Bozeman.....	104 00	84 00	54 00	24 "
Butte.....	98 00	75 00	45 00	15 "
Deer Lodge.....	100 00	75 00	45 00	22 "
Helena.....	100 00	75 00	45 00	24 "

Fare, Omaha to Dillon—Regular 1st Class, \$85.00; 2d Class, \$70.00; Emigrant, \$40.00.

For rates from St. Joseph add \$4 to 1st Class, \$3 to 2d Class, and \$2.50 to Emigrant rates from Omaha.

For rates from Kansas City add \$6 to 1st Class, \$5 to 2d Class, and \$4 to Emigrant rates from Omaha.

SOMETHING ABOUT ACCOMMODATIONS.

It is needless to enlarge upon the splendidequipment, the steel track and the lavish attention offered tourists on the great overland route—the Union Pacific. At the head of all American railways in everything pertaining to excellence of management, it gives the Montana-bound traveler a start on this northern journey which he must always remember with feelings of extreme pleasure. The Utah & Northern Branch—the longest and finest narrow gauge railway west of the Rockies—in close connection with the large and comfortable Concord coaches of the Gilmer & Salisbury Line, is enabled to render the completion of the journey as pleasant and as speedy as could be expected or desired. Fair eating stations along the stage line, the telegraph always at hand, many vistas of beautiful scenery, some of the best mineral and agricultural districts in the west, and an opportunity of seeing almost the entire breadth of Montana are among the advantages offered by this route exclusively.

Holders of 2d class and emigrant tickets receive *full first-class accommodations in Concord coaches*, of the Gilmer & Salisbury Line, from the railway terminus to destination. 100 lbs. baggage free by rail; 40 lbs. free by stage, on all classes; extra baggage five to ten cents per pound. Extra baggage may also be forwarded from the Utah & Northern terminus by freight wagons, at a cost of one and a half to two cents per pound, its transportation in this way, however, requiring more time. Freights on household goods (well boxed) from Omaha to Dillon, \$5 per 100 pounds, or double that rate if carried in trunks.

On the cars children five years old and under 12, are charged half fare in all classes; under five years old, free; on stages, children three years old or over, and under 12, half fare; under three, free.

LOW RATES FOR COLONIES.

Organized parties who desire transportation only from Omaha to the terminus of the Utah & Northern Branch in

Montana, can obtain reduced rates—as low as \$30 per ticket—according to their numbers, by corresponding with the General Passenger Agent of the Union Pacific Ry. at Omaha.

To accommodate colonies, emigrant movables, with or without live stock, in car loads, and horses, cattle or sheep in straight car loads, will be billed from Council Bluffs to Dillon, at the special low rate of \$350 per car of 20,000 pounds. From Kansas City, Leavenworth and St. Joseph, \$360 per car of 20,000 pounds.

When Through Tickets to Montana points cannot be obtained at or near the beginning of a journey, parties are advised to procure tickets to San Francisco, and upon arrival at Council Bluffs, Omaha, St. Joseph or Kansas City, these can be exchanged for tickets to Montana.

HOW TO TRAVEL IN MONTANA.

Helena, Deer Lodge, Butte, Salisbury and Glendale are on the two great north and south daily stage lines, which connect with trains of the Utah & Northern Branch of the Union Pacific Ry. Intermediate stations on those lines are reached at the same expense as the prominent points just named, and following are present stage arrangements for others:

Bannack is reached by daily stage from Dillon; distance, 28 miles.

Virginia City—By daily stage from Salisbury, 28 miles.

Missoula and Bitter Root Valley—By daily stage from Deer Lodge 100 miles.

Philipsburg—By tri-weekly stage from Deer Lodge, 57 miles; or from Butte, 25 miles.

Bozeman, Fort Ellis and Miles City—By daily stage from Virginia—distance, 75 miles, 79 miles, and 412 miles respectively, or by daily stage from Helena, 101, 105 and 428 miles.

Fort Shaw and Fort Benton—By daily stage from Helena, 84 and 144 miles respectively.

Diamond City and White Sulphur Springs—By daily stage from Helena, 35 and 78 miles respectively.

Penobscot Mine and Lincoln—By daily stage from Helena, 24 and 52 miles respectively.

Radersburg and Gallatin City—By daily stage from Helena, 48 and 65 miles respectively.

Stevensville, Corvallis and Skalkaho—By tri-weekly stage from Missoula, 28, 43 and 57 miles respectively.

DISTANCES AND RATES IN MONTANA.

Following are carefully compiled distance tables from Helena, Deer Lodge and other points to all stations in Montana with stage fares. On the Helena and Walla Walla route, stages do not as yet run beyond Missoula, although a weekly mail is carried through from the latter point and the present rapidity of settlement justifies the belief that coaches will soon be running from the extreme western settlements of Montana to the extreme easterly ones of Washington Territory and Oregon:

ROUTE TO UTAH & NORTHERN R. R. TERMINUS—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare
Clancy.....	18	\$ 1 50	Fish Creek.....	72	\$ 9 00
Jefferson.....	22	2 00	Silver Star.....	85	12 00
Beavertown.....	24	2 50	Salisbury.....	90	13 06
Basin.....	45	5 00	Virginia City.....	120	16 00
Whitehall.....	60	8 00	Dillon.....	120	20 00

DEER LODGE, BUTTE AND MISSOULA ROUTE—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare
Sweetlands.....	25	\$ 2 00	New Chicago.....	77	\$11 00
Blackfoot.....	29	3 00	Phillipsburg, via N. Chic..	102	12 00
Deer Lodge.....	45	6 00	Mouth of Bear.....	100	12 00
Butte, via Deer Lodge.....	80	8 00	Newman's.....	118	14 00
Pioneer.....	61	8 00	Missoula.....	150	17 00

FORT BENTON ROUTE—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare.
Silver City.....	12	\$ 2 00	Fort Shaw.....	84	\$ 9 00
John's Station.....	18	3 00	Sun River Crossing.....	85	10 00
Fergus.....	22	4 00	Sun River Leaving.....	93	11 50
Rock Creek.....	35	5 00	Twenty-Eight Mile Spr'gs.	116	13 00
Dearborn River.....	50	7 00	Ft. Benton.....	144	15 00
Bird Tail.....	70	8 00			

DEER LODGE AND DILLON ROUTE—DAILY.

From Deer Lodge to—	Miles.	Fare.	From Deer Lodge to—	Miles.	Fare.
Warm Springs.....	18	\$ 1 50	Wonderlichs.....	65	\$ 6 00
Silver Bow.....	35	2 00	Glendale.....	75	10 00
Butte.....	40	3 00	Dillon.....	105	

HELENA AND BOZEMAN ROUTE—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare.
Half-Way House.....	14	\$ 2 00	Hamilton.....	78	\$ 9 00
Beaver Creek.....	22	3 00	Central Park.....	86	10 00
Springville.....	33	3 50	Bozeman.....	101	12 00
Hadersburg.....	48	5 00	Virginia City, via Central		
Gallatin City.....	65	7 50	Park.....	120	12 00

MISCELLANEOUS ROUTES FROM BOZEMAN.

From Bozeman to—	Miles.	Fare.	From Bozeman to—	Miles.	Fare
Fort Benton.....	240	\$27 00	Virginia City.....	70	\$12 00
Diamond City.....	150	17 00	Fort Custer via Sherman.....	266	36 00
Deer Lodge.....	140	18 00	Dillon, (terminus of Utah		
Butte.....	160	20 00	Northern Branch).....	125	19 00
Missoula.....	230	29 00			

ROUTES, DISTANCES AND RATES.

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BOZEMAN AND TONGUE RIVER LINE—DAILY.

From Bozeman to—	Miles.	Fare.	From Bozeman to—	Miles.	Fare.
Hopper's.....	16	\$ 2 00	Terry's Landing.....	230	\$27 00
Henson's Landing.....	30	3 50	Etchetah (Ft. Custer J'n)...	227	28 00
Shield's River.....	33	4 00	Froze-to-Death.....	249	30 00
Hunter's Springs.....	46	5 50	Big Porepine.....	267	32 50
Gage's.....	49	6 00	Rock Springs.....	271	33 00
Big Timber.....	64	8 00	Little Porepine.....	285	34 50
Sweet Grass.....	74	9 50	Johnson's.....	290	35 00
Stillwater.....	103	12 00	Sand Creek.....	296	36 00
Young's Point.....	121	14 50	Bull Creek.....	305	37 00
Canyon Station.....	141	17 00	Miles City and Ft. Keogh.....	325	38 00
Coulson.....	149	18 00	Glendive, (terminus N. P.		
Huntley.....	150	19 50	R. R.....	400	50 00
Riverside.....	213	25 00			

DIAMOND CITY AND WHITE SULPHUR SPRINGS—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare.
Canyon Ferry.....	18	\$ 2 50	White Sulphur Springs.....	78	\$10 00
Blackwell's.....	26	4 00	Round trip tickets, Helena		
Diamond City.....	35	5 00	to Sulphur Springs and		
Camp Baker.....	60	7 50	return.....		18 00

VESTEL AND LINCOLN LINE—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare.
Silver City.....	13	\$ 1 50	McClellan.....	45	\$ 6 00
Mount Pleasant.....	20	2 00	Lincoln.....	52	7 50
Vestel.....	24	3 00			

BITTER ROOT VALLEY ROUTE—TRI-WEEKLY.

From Missoula to—	Miles.	Fare.	From Missoula to—	Miles.	Fare.
Stevensville.....	28	\$ 3 00	Skalkaho.....	51	\$ 6 00
Corvallis.....	43	4 50			

HELENA AND JEFFERSON EXPRESS—DAILY.

From Helena to—	Miles.	Fare.	From Helena to—	Miles.	Fare.
Ciancy.....	18	\$ 1 00	Concentrator.....	25	\$ 2 00
Jefferson.....	22	1 50			

HELENA TO WALLA WALLA.

From Helena to—	Miles.	From Helena to—	Miles.
Deer Lodge.....	35	Summit Steven's Pass.....	237
Flint Creek.....	79	Cour D'Alene Crossing.....	279
Hell Gate, First Crossing.....	97	Camas Prairie Creek.....	329
Big Blackfoot.....	117	First Crossing Palouse.....	361
Hell Gate Sands.....	132	Snake River.....	418
Missoula.....	150	Touche.....	448
Brown's Prairie.....	174	Walla Walla, Washington Ter.....	468
Heidler Prairie.....	207		

TO SOUTHEASTERN MONTANA.

The vast domain in Northern Wyoming and Southeastern Montana, known as the Big Horn and Powder River Regions, and much of the Yellowstone Valley, in Central and Eastern Montana, the whole embracing some 25,000 square miles of desirable agricultural, mineral, grazing and timber lands, is now open to occupation. The rich mines of the Big Horn, and valuable grazing and farming lands adjacent are attracting much attention. Good wagon roads traverse the entire region; the railway and telegraph are projected; streams are

bridged, and the glowing reports of the pioneers concerning soil, climate, grasses and mines, insure for the country a generous influx during 1881.

The entire region is now easily reached via the Union Pacific Railway, to Rock Creek Station, Wyoming, and thence by the Rock Creek and Fort Custer daily stage and express line. Rates of fare from Omaha to Rock Creek are, 1st class, \$30.05. Following are distances and rates by stage from Rock Creek to important points:

ROCK CREEK TO—	Miles.	Fare.
Fort Fetterman.....	85	\$15 00
Powder River.....	175	28 00
Fort McKinney.....	225	30 00
Fort Phil Kearney.....	250	40 00
Fort Custer.....	350	55 00
Echetah.....	385	60 00
Miles City.....	430	70 00

The Northern Pacific Railroad, which has just entered Montana from the east, will probably inside of two years afford another all-rail route to the heart of Montana, and will prove a great factor in the complete reclamation from savage tribes of the great and rapidly developing basins of Yellowstone, Big Horn, Judith and Musselshell rivers. During a portion of each summer Eastern and Northern Montana are accessible via the Yellowstone and Missouri rivers by steamer. But the average immigrant who desires to utilize all of his first summer season in a new country and wants to strip his trip of all elements of uncertainty as to danger, delays (and consequent additional cost) along the route, and the capitalist or business man, whose time is money, generally prefer taking the direct, safe, and economical all-rail route as it now exists—westward via Omaha and Ogden.

CITIES AND TOWNS.

Helena, the county seat of Lewis and Clarke county, and territorial capital, is situated in the southern part of the county, fifteen miles west of the Missouri river and 110 miles north of the present Utah & Northern Railway terminus, at an altitude of 4,266 feet. Its population is about 5,000, and we find it a compact and splendidly built little city, with a taxable wealth of \$2,000,000. Fine and capacious blocks line the business streets, while elegant and tasty residences, amid beautiful lawns and flower-gardens, adorn the hillsides over-

HENRY LAKE.—*Thos. Moran.*

looking. There are numerous and very creditable churches, schools, libraries, a well organized board of trade, United States assay office, Masonic and Odd Fellows' halls, good hotels, an elegant opera house, good asylum and hospital, and two of the best daily and weekly newspapers published in the far-west states or territories. The latter are the *Herald* and *Independent*. The Masonic Temple cost \$35,000; public school, \$20,000; assay office, with improvements now in progress, \$60,000; court-house and jail, \$35,000, and many residences cost from \$5,000 to \$15,000 each. Two banks care for an aggregate of \$1,000,000 average deposits. They sell exchange to the amount of \$3,500,000 per annum, and they bought \$600,000 worth of gold dust, and shipped \$1,000,000 worth of silver bullion in 1880. The First National Bank, by the way, is an exceptional institution of its kind. Its cash business frequently runs up to \$200,000 per day, and averages \$75,000 per day the year through, or a total business in twelve months of nearly \$28,000,000! Nine daily and tri-weekly stage lines gather here the travel and trade of a region twice

as large as the Empire State. The men and animals thus employed are counted by hundreds, and the miles of road traversed run up in the thousands. Helena is the center of one of the largest and richest gold and silver mining regions in the world, a very complete showing of which will be found in the chapter on mining. It is also the supply point for numerous rich agricultural and pastoral districts. Its merchants enjoy an enviable wholesale trade with most of the Montana settlements, and three firms do an annual business aggregating about \$1,000,000.

Butte, the county seat of Silver Bow county, and the most important mining center in Montana, is located near the head of Deer Lodge river, sixty-five miles north of the Utah & Northern temporary terminus; population, 5,000; altitude, 5,800 feet. Its broad streets are lined with solid business blocks and tasty residences—all the growth of about four years. The greatest silver and copper mines of the territory are located within sight of town—indeed, many run under the streets; over 4,000 quartz mines have been located in the immediate vicinity; 1,500 men are employed in the district; new and costly improvements are being made as rapidly as material can be procured, and developments on the mines are of the most satisfactory character. A dozen mills and arrastras are constantly busy crushing the rich silver ores. Among these the Alice mills, costing some \$450,000, the Lexington, \$40,000, and the Dexter, \$90,000, are models of their kind. The total yield of the Butte mines in 1880 is placed at \$1,500,000, and the ore shipped east for treatment aggregates nearly 3,000,000 pounds. Butte has good churches, schools, and two excellent newspapers—the *Miner* and *Inter-Mountain* both issued daily. Its numerous busy quartz mills, smelters, foundries and planing mills, and great mining activity, together with its extensive building operations, render it one of the liveliest and most thrifty cities in the Rockies. Many fine brick fire-proof business blocks were erected here in 1880. It is generally believed that Butte's population will nearly double in 1881, and its mineral yield will certainly double that of any previous year. The Utah & Northern Branch of the Union Pacific will be completed to Butte in August, 1881.

Deer Lodge City, the county seat of Deer Lodge county,

is beautifully located on the east bank of Deer Lodge river, 4,546 feet above the sea, and is distant from the Utah & Northern winter terminus about 105 miles. It contains 700 inhabitants, is tastily built, and is a general supply and distributing point for all the fertile valleys and mining districts for forty miles around. It is the educational center of the territory, containing a public school of exceptionally high grade, the Montana Collegiate Institute, and a Roman Catholic boarding school under charge of the Sisters of Charity. The Collegiate Institute building, a fine specimen of architecture, was completed and furnished in 1879, with the most approved apparatus at a cost of \$22,000. There are two good hotels, whose arrivals in 1880 footed up over 15,000, which would indicate a large travel to and through the town. The *New Northwest*, a large weekly newspaper, ably edited and published here by Mills Brothers, is one in which every Montanian takes a personal pride. The daily stage and telegraph connect Deer Lodge with the railroad, and with Helena, Butte, Missoula, etc.

Virginia City, the county seat of Madison county, and the commercial center of southern Montana, is located in Alder gulch, fifty-eight miles north of the Utah & Northern terminus. It contains 1,000 inhabitants, and has telegraph and daily stages to different tributary points. The two banking institutions sold exchange to the amount of \$2,150,000 in 1880, bought \$500,000 worth of gold-dust and bars, and had average deposits of \$100,000. Virginia City is noted for the value and excellence of its public improvements. It has a \$35,000 court house, a \$30,000 Masonic Temple, \$12,000 public school house, good Episcopal, Methodist, and Catholic churches. The moderate altitude—5,713 feet—and genial climate are proven by pretty flower, fruit, and vegetable gardens which ornament some of the homes. Virginia has a good newspaper, the *Weekly Madisonian*. Salisbury, Sterling, Sheridan, and Silver Star are other prominent points in Madison county. Virginia City is the outfitting point for Yellowstone Park territory, and stages leave here daily for the park, 90 miles distant, during the tourist season.

Bozeman, the county seat, of Gallatin county, is beautifully located near the base of Bridger Mountain, Gallatin Valley, at an elevation of 4,900 feet. The mountains, rising

abruptly 4,000 feet above the valley, abound in wild and romantic gorges, through which the clearest streams, carrying beauty and fertility to valley lands below, are always rushing. The place contains a population of about 1,200. The broad, level streets are lined with good, substantial business blocks, while on outer avenues are found some of the most elegant and costly residences in the Territory. Bozeman boasts water-works, two good hotels, planing mill, flouring mill, an \$18,000 public school building, an \$8,000 church, as well as a less pretentious one. Over \$200,000 were put into buildings in 1880. A Masonic hall, a court house costing \$25,000, a private bank, the *Avant Courier*, a live weekly news-paper, and a United States land office are other institutions. Bozeman has telegraphic communication with the railroad, and daily stages to Helena, 110 miles distant, as well as to the Utah and Northern Branch of the Union Pacific Railway, via Virginia City, 115 miles distant. The head of navigation on the Yellowstone is only some 45 miles away, and Bozeman, in common with all of Gallatin county, is thus easily approached by the river route, and can market productions to the very best advantage. It is also a prominent outfitting point for Yellowstone Park, the nearest border of which is only 75 miles away. Among the many attractions near Bozeman is Mystic Lake, 14 miles; Lund's Hot Springs, 8; Rock Cañon, 5; Bridger Cañon, 3; Bear Cañon and Lakes, 6; Hunter's Hot Sulphur Springs on the Yellowstone, 47; Middle Creek Falls and Cañon, 15; and Mount Blackmore, 30 miles.

Fort Benton, the county seat of Choteau county, established in 1850 by the American Fur Company as an Indian trading post, still holds its own against nearly all other western fur depots. The exports of fur from Montana, nearly all of which were made from here, have reached the value of \$6,000,000 in the past fifteen years. Over 60,000 robes were shipped from here in 1878. Engaged in the freighting of furs out of the Territory, and merchandise in, are fifteen boats, costing altogether \$400,000, and employing some 500 men. Last year they brought in 9,500 tons of freight. The transportation of this freight to other portions of Montana and British North America involves the employment of 250 men, 2,000 work animals and 400 wagons. The old fort, the

time-honored stockade of a quarter of a century's thrilling history, is deserted, its walls falling into decay, and its block houses condemned as unsafe. But the town near by has 1,200 busy, intelligent inhabitants, a number of whom are building elegant residences, and showing in other ways a determination to live and die here. The altitude is 2,814 feet. Large business houses filled with goods line the streets, school houses and churches are under way, and it is time to fancy that migratory star of empire as flickering far northward in the vales of the Saskatchewan. The *River Press* one of the very best papers in the northwest is published here weekly and contemplates a daily edition soon. The *Benton Record* is also issued weekly.

Miles City, county seat of Custer county, and the metropolis of Eastern Montana, is located near the mouth of Tongue River, 425 miles from Helena, or 335 miles east of Bozeman. It has a population of 800; has the telegraph to Bozeman and Deadwood, and a tri-weekly stage line to Bozeman and Glendive. Every line of business found in lively out-west towns is represented here. There were thirty-five steamboat arrivals on the Yellowstone at Miles City last season, landing some 2,000 tons of private freight and large quantities of military stores for Fort Keogh, two miles distant. The town boasts a \$2,000 court-house, a theater, public schools, and a weekly newspaper. Kirbyville, 147 miles east of Bozeman, and Guyville, 65 miles below Kirbyville, on the Yellowstone, are thriving agricultural settlements. Sherman, near the confluence of the Big Horn with the Yellowstone, is another of the embryo towns, with a most delightful location. Custer county is reported out of debt, with an assessed valuation of about \$600,000. Population about 1,800.

Missoula, county seat of Missoula county, has a very pretty location at an altitude of 3,318 feet on Missoula river, near its junction with the Bitter Root. It has a strong national bank, a \$45,000 flouring mill, whose snowy product was 800,000 pounds last year, a neat little church in which several congregations worship, nice public school, Catholic convent, and a good weekly newspaper—the *Missoulian*. The large general merchandising establishment of Worden & Co., (who also own the flouring mill) and the village hotel are points which home seekers will wish to note. It contains

some handsome residences, and a population of about 800 thrifty and contented people. Its nearest and largest suburb—Frenchtown—is eighteen miles down the valley, and contains a flouring mill, saw-mill, store, hotel, etc., and about 200 people, of whom many are French and Indian half-breeds. A good stage line leads from Missoula up through the Bitter Root Valley, and another out to Deer Lodge and Helena, the former being 105 and the latter being 145 miles distant. A road from Missoula to the Utah & Northern Railway, via Bitter Root Valley, enables home seekers to reach this garden spot of Montana by a little over 250 miles of staging.

White Sulphur Springs, the county seat of Meagher county, located in Smith River Valley, 78 miles east of Helena, is not only the most prominent health resort in Montana, but, by virtue of its superb situation amid splendid agricultural lands, extensive grazing sections, and rich mineral districts, must soon be one of the most flourishing commercial centers of Montana. The village now contains some 300 inhabitants, an excellent weekly paper, the *Montana Husbandman*, (the only journal paying special attention to agricultural and stock interests in the entire Northwest), two or three creditable hotels, a fine public school, and, in connection with its hot mineral springs, which are described elsewhere, several commodious and well arranged bath-houses. The village is delightfully located, with splendid hunting and trout fishing in sight, and is the Montana resort par excellence for invalid or sportsman. Stages run daily to and from Helena, and the town is, on account of its superior location and the enterprise of its business men, the outfitting point for the Musselshell, Judith and Barker districts, all of which are easily accessible by good wagon roads. There is ample water power for the driving of any kind of machinery, beautiful mountain scenery, mild and healthful climate, good society, rich lands of all kinds in the immediate vicinity, which can be homesteaded, entered or located under the several laws governing the location and pre-emption of government lands, or bought at a reasonable figure from persons who have already acquired title to the same.

Philipsburg, 25 miles northwest of Butte, population 500; Glendale, 30 miles south of Butte, population 600; Dillon, the winter terminus of the Utah and Northern Branch of

the Union Pacific Railway, population 600; Radersburg, 48 miles southeast of Helena, population 250, and Wickes, 25 miles south of Helena, with a population of 400, are the principal towns in addition to those above described. All are improving and have either rich mines or agriculture, or both, to sustain them.



CHAPTER IX.



UPPER FALLS, YELLOWSTONE.

YELLOWSTONE NATIONAL PARK.

OUR general government, by an act which passed both houses of Congress unanimously, and was approved March 1, 1872, "has withdrawn from sale and occupancy, and set apart as a National Park or perpetual public pleasure ground, for the use and enjoyment of the people," a region 65 miles long by 55 miles wide, covering an area of 3,575 square miles, or 2,288,000 acres, or nearly 200 square miles more than the area of both Delaware and Rhode Island. It is mostly in the northwest corner of Wyoming, stretching a few miles into Montana and Idaho on its north and west sides. It extends from a few miles east of 110° to a few miles west of 111° west longitude from Greenwich.

Here nature has assembled such a surprising number of the most sublime and picturesque objects, and, amidst the grandest scenery of mountains, lakes, rivers, cataracts, cañons and cascades, exhibits such a variety of unique and marvelous phenomena of spouting geysers, of boiling and pulsating hot springs and pools of steam jets, solfataras, fumaroles and

salses, rumbling and thundering and pouring out sulphurous hot water, or puffing out clouds of steam, or throwing up great masses of mud that its early explorers gave it the name whose appropriateness is universally recognized, of "Wonderland."

The route of tourists from the east to the National Park is over any of the connecting lines of railway to Omaha; thence over the Union Pacific and its Utah & Northern Branch to Dillon, Montana; and thence by Concord coaches via Virginia City and the Madison Valley route, as described further on, to the heart of Geyserland. Time, from Omaha to the Utah & Northern terminus (or departing point of Yellowstone Park stages), three and one-quarter days; stage time, thence to the geysers, from 26 to 30 hours, which period can be divided into a two days' daylight trip, should parties prefer to tarry at Virginia City or Henry Lake. Time, from Omaha to the Geysers, about four and a half days; or, from Chicago or New York, from five and a half to seven days.

A DELIGHTFUL RIDE.

The stage coach, which above all others in my estimation, deserves a friendly handing down to history, was that of the G. W. Marshall Line, which was the first public conveyance to enter Yellowstone National Park. It started on its first trip into the Park from Virginia City, Montana, at daylight of October 1st, 1880, and had, besides the driver, the writer hereof and his joyous and appreciative better half as self-appointed and sole participants in such agreeable pioneering duty. The ride from Virginia to Lower Geyser Basin, now a matter of only about 16 hours, is a fitting prelude to the pleasures of the Park tour itself. The first three miles is a steady climb to the top of one of the Madison ranges, whence a miniature world of river, vale and mountain is compassed by one sweep of vision.

At our feet was the Madison River, whose remarkably sinuous course through grassy meadows presents a picture always to be remembered as a marvel of picturesque beauty. The mountains on the opposite side of the valley are rugged in the extreme. The channel of the river might well be called a work of art, and the beautiful little islands which dot it in every conceivable form, would answer for crowning features. It is a landscape which we admired piecemeal and

rejoiced in for 30 miles, for our course was directly through the valley all that distance.

Shortly after crossing the river, which, by the way, is a clear, swift stream 75 yards wide and nearly two feet deep, a delicious breakfast was served us, as it will probably be for many future Park tourists, at the tidy log cabin home of Gilman Sawtelle. Sawtelle is the Yellowstone Park guide, who is credited with remarking of a certain enthusiastic description of the Park which tourists have a habit of carrying in with them: "If it were not for that there article in that there magazine, these yer springs would be considered a big thing; and I think the best way to do is, let the magazine go to thunder and enjoy the scenery!"

A 30-mile stretch of the beautiful and fertile Madison valley ensued, almost every mile of it a temptation for the camper or the more practical home-seeker. Herds of antelope interviewed us at short range, clearly proving our presence an unusual innovation, and rippling trout streams, chaste feeders of the Madison, danced off through grassy uplands or meadows at short intervals until we reached the summit of the Rockies.

REYNOLDS' PASS AND THE THREE TETONS.

The pass is so easily overcome that we could scarce realize the waters were flowing in an opposite direction; the summit is only 6,911 feet above the sea, and as richly carpeted with grasses and in midsummer with flowers as any eastern meadow. We were here confronted by a landscape of such marvelous and singular beauty that for an hour even "Wonderland" could claim no share of thought. The tremendous height and abruptness of the Three Tetons and the splendor of their garb riveted attention at the first instant, although they were at the farthest edge of the magnificent panorama, 100 miles to the southeast. The first light snows of October had clung to their precipitous sides and crested their sharp pinnacles; the sun was just sinking below the wonderful horizon furnished by the main range of the Rocky Mountains, and the three mighty peaks, which in the clearer sunlight of the day must have looked like burnished silver, now wore a tint of lilac, a few minutes later of gold, and as the last rays

of light faded were a mighty bulk of cold gray that finally brought us to our senses. In the immediate foreground was

HENRY LAKE,

a sheet of water two miles wide and five miles long, washing low grassy shores and yet within 500 feet of the summit of the Rocky Mountains, some of whose romantic peaks close to the east and west shores rise abruptly 3,000 feet above it! Dotted with numerous islands and indented with many graceful tongues of land rich in foliage, it is indeed a handsome picture at any time. But in October, as we saw it, with every clump of foliage running from its shores high up among the nooks of neighboring mountains all aglow with the richest tints of autumn, it was simply the most enchanting bit of aquatic scenery memory can recall. Here, as all along the route into and through the Park, every little rivulet was bordered with the willow, boxelder, sumac, aspen and other shrubbery whose autumnal tints were artistic massings of scarlet or russet or gold, and as intermingled with the dark green of deep pine forests, formed boquets more dazzlingly beautiful than are ever gathered.

Henry Lake is full of large salmon trout. Our friend Sawtelle, who was the pioneer here and owns several good houses near the north shore, has caught 160 in an hour with hook and line, which averaged $2\frac{1}{2}$ pounds each, and in one season sold \$5,000 worth of trout in the Montana settlements, realizing as high as \$250 per wagon load. Spearing fish by torchlight is an exciting pastime here. Boats are needed to fish successfully, and these will be supplied by Mr. G. W. Marshall during the summer of 1881, as will also ample entertainment for tourists. Myriads of water fowl, including all the species of ducks common to our fresh water lakes, geese, gulls, brant, cranes, snipes, the lovely white swan, and even pelican, inhabit the lake and afford rare sport for the huntsman.

THE SURROUNDING MOUNTAINS,

are full of large game, some of which approached to within easy gunshot of us as we journeyed on toward the Park. Two very large and interesting caves have been found in Sawtelle Peak 12 miles away, and 10 miles northwest of Henry Lake is Cliff Lake, a most remarkable sheet of water, hav-



The Grotto

ing a total length of three miles and a breadth of half a mile, and in whose azure depths 1,400 feet of line has failed to reach bottom. Except for a little space, where two swift mountain streams pour into it, vertical basaltic cliffs from 400 to 600 feet high surround it. A conical pine-covered island rests, an emerald gem, upon its bosom. Henry Lake and surroundings are well worthy a two or three days' halt upon the part of those who delight in mountaineering, hunting, fishing and sailing, or desire rest, and were such scenes grouped anywhere except at the Gate of Wonderland they would be heralded far and near as attractions worth a jaunt across the continent.

Turning eastward from Henry Lake, over a natural roadway, we again, at a distance of not more than 10 miles from Reynolds Pass, found ourselves on the summit of the Rockies, on Tyghee Pass, altitude 7,063 feet, which is almost as easy of ascent as Reynold's Pass, and in a few minutes were bowling cheerily across luxuriant meadows of the Upper Madison Valley. The river could be seen meandering off for miles to the left among alternating groves and grassy parks. The view eastward and southward compassed dense forests and a wilderness of pine-covered mountains. Fifteen miles from Henry Lake we crossed the South Fork of the Madison near one of the most admirable camp grounds imaginable. To catch a mess of trout (three two pounders) was but a way-side circumstance while the driver watered the horses, and to have bagged one of a large herd of antelope contentedly feeding half a mile down the valley would not probably have delayed us much, but a mile away was the western

ENTRANCE TO THE PARK

and ten miles away at Riverside station, on the Madison, we were expected to early tea. Of all the natural drives in the western mountain country the first ten miles succeeding our entry to the National Park probably forms the finest. For about that distance we glided along over an almost perfectly level bench land, a delightful alternation of evergreen groves and pretty park-like openings, appropriately named Madison Terrace. The roadway is a solid, compact, gravelly soil, 50 feet above and often in view of Madison river. The skillful landscape gardener might take some lessons from nature's charming arrangement of lawn and shrubbery here. Next

summer tourists are to whirl through these ten miles of shady avenues in 50 minutes to make up for time they will lose in climbing Madison Range just beyond.

At Riverside, where a bountiful supper awaited us, one road strikes directly across a bold spur of the Madison Range to Lower Firehole Basin, 12 miles away, and another, the old road, leads along Madison River through its upper cañon (of which a charming view is given in these pages) to the same destination, and consuming about the same distance. The mountain route now takes preference, because it does away with the necessity of fording the turbulent and sometimes dangerous river, and affords some exceptionally fine pieces of scenery. We gained the summit late in the evening, but not too late to enjoy a fine panorama of the magnificent ranges surrounding the Park on the west and southwest, of the Upper Madison Basin and above all of Madison River, winding off through a landscape varied and grand for thirty miles. From the summit down into Geyserland is a seven-mile stretch of heavy pine forest.

THE PIONEER HOSTELRY.

The National Park House, Lower Geyser Basin, forty-five miles from Henry Lake, or ninety-five miles from Virginia, was reached too late at night to admit of further sight-seeing, and it was with no little reluctance that we closed our eyes in the midst of marvels of which we had heard so much without seeing some of them. We found the pioneer hotel of the National Park to be a neatly and solidly built two-story hewed log structure, then nearing completion, and designed to afford accommodation for from thirty to forty guests. It is romantically located at the foot of high cliffs of the range we had just crossed, with the Forks of Firehole River and a pretty natural lawn in the foreground and a cold rivulet dashing by the door on the right. It is the property of Mr. Marshall, the stage man, who promises a complete and homelike hostelry and good fare for future visitors.

OUR FIRST DAY IN WONDERLAND.

The following morning sunrise found us out taking a first survey of surroundings. For miles in almost all directions, through a frosty atmosphere and yet one marvelously clear and serene, graceful columns of snow-white steam were

ascending, some in spasmodic puffs like those of a hard-worked engine, others gliding upward so regularly as to betray no lack of power. Even Firehole River sent its sheets of steam as far as we could trace, and the entire display filled us with awe and an almost unconquerable desire to "make a bee line" for the nearest geyser before breakfast. Our first trip was to Geyser Meadows, two miles away, on the west side of Firehole River. A few rods above the house a fine young deer came out of the neighboring forest into the open meadow and boldly surveyed us at a distance of sixty yards; of course we had left the rifles at the hotel.

A little further on we heard the rattle of machinery, and there on October 3d, at an altitude of 7,200 feet above the sea, in grass almost as high as the horses' backs, ran the pioneer mower of Yellowstone Park. The hay was being put up as winter food for the horses of the Yellowstone Park Stage Line. A jolly haying party were raking, hauling and stacking, and the singing of meadow larks and other birds completed the picture of a May hay-day. But there was sadness in one heart even amid such exhilarating scenes. One of the newcomers among the workmen had been told that if he would put his heavy woolen shirt into "Thirty-Minute Geyser," which was in business only a few rods away, it would be thoroughly washed. The man had tried it and was displaying a piece of flannel about as large as one hand and said that was the largest piece he could find. When we left him he was ready either for a new shirt at others' expense or a fight. The geyser in question did not keep us in waiting long but soon sent a beautiful stream 25 feet into the air, the volume far exceeding that of any natural fountain we had ever seen. Seventy-five yards away was Dome Spring, a boiling pool of 8 feet in diameter, and at the top of a dome of calcareous matter 20 feet high, while 200 yards southeast of this was the unique Brookside Spring. The latter had also formed a dome some 25 feet high, whose sides were livid with shades of carmine and pink and orange, formed by deposits of the constantly overflowing mineral-charged waters. Quarter of a mile southeast from this was

THE QUEEN LAUNDRY,

an immense fountain of sealding water, whose component parts aided to render it the largest and most complete washing

machine in the world. It has an orifice 30x50 feet, through which immense volumes of water are hurled to a height of five or six feet. Overflowing in a series of pools for half a mile, it finally drops into a superb natural basin, with walls as hard and almost as beautiful as ivory, 30 feet long, 20 feet wide and 5 feet deep, and is here cool enough to afford a luxuriant bath. Its cleansing power may be judged from the fact that the dirtiest saddle blankets have been thoroughly washed in its hottest pools in a few minutes. It is the popular bathing resort of this portion of the park, and will probably always be so.

Fairy Falls Creek, which makes a perpendicular leap of 250 feet over a neighboring cliff, receives the waters of many other wonderful springs, and the verdant meadows, skirted by romantic groves of pine, add to the beauty and general interest of the surroundings.

Crossing to the east side of the Fiehole and ascending by a very picturesque road on that bank of the stream with hot springs to the right of us, hot springs to the left of us, and geysers in front of us, we soon reached

MIDWAY GEYSER BASIN,

five miles from the hotel, the location of the grandest hot springs in the world. On the opposite bank we observed a tremendous overflow of hot water into the river. Crossing the stream we found that this was occasioned by an enormous hot spring, some two hundred yards from the river. Dr. Hayden has most appropriately named it the Great Spring, and it certainly is the grandest hot spring ever seen by human eye. It has an aperture *two hundred and fifty feet in diameter*, with surrounding walls or sides 30 feet high. The waters are in constant ebullition, and great columns of steam, ever arising, fill the orifice. A passing breeze swept the steam towards us, and our faces were scalded in an instant. Hurriedly changing our position we could look down into this terrible, seething pit, and were filled with amazement and awe. The beholder involuntarily shudders as he cautiously peers into the yawning gulf of hot water and steam, and friend clings to friend, lest an unwary step or the reeling brain shall precipitate them into the frightful chasm. For a distance of a thousand yards the river bank was gorgeously colored by the mineral sediment of the waters.

Around this and neighboring springs every possible shade of color, from the vivid scarlet to a bright rose, and every shade of yellow to a delicate cream, mingled with vivid green from minute vegetation, lend an enchantment to the otherwise terrible scene, that beggars description.

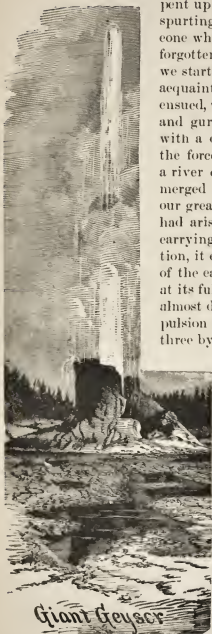
Only a few yards away was a cold spring, 25 feet in diameter, and in the immediate vicinity were two other immense hot springs, whose waters were so marvellously clear that we could look down into the heart of mother earth much farther than the reader would believe, if told, and whose edges and mysterious sides and cavernous depths, running far out under our feet, were masses of the most exquisite carving and beadwork imaginable. Sections of surrounding trees, luckless grasshoppers, feathers, etc., were found in all stages of petrification as a result of contact with these silicious waters.

Near these clear water springs is an immense boiling chalk vat. The vat is 40 by 60 feet and filled with what Prof. Hayden calls "an impalpable silicious clay," but to an unlearned mind it is *chalk*, with colors of every shade, from bright, rich pink to snowy white. The mushy mixture keeps up a constant boil and spatter, particles of the hot chalk often being thrown two or three feet above the surface.

Briefly reviewing these wonders, which deserved days of close attention, we passed on toward Upper Geyser Basin, some four miles away. Recrossing the Firehole River we discovered a most unique curiosity which we have never seen mentioned in any report of previous writers. We named it "Tree Geyser" because a geyser was actually spurting upward through a hollow cottonwood stump. The geyser was evidently of quite recent origin, because it had only partially petrified its wooden exit. It was certainly a singular accident which led to an eruption through the roots and heart of a large tree.

UPPER GEYSER BASIN.

A thirty-minute drive took us to the heart of Upper Geyser Basin. Halting for lunch in a pretty little grove, which commanded a view of nearly the entire basin, and within a stone's throw of the "Castle," we had scarcely commenced eating when that magnificent fountain gave vent to its mighty force in a series of underground thunder, and its



pent up flood appeared dancing and spurting just above the great castle cone which surrounds it. Lunch was forgotten, and with a cry of delight we started at full speed for a nearer acquaintance. A few modest spurts ensued, when all at once, with a rattle and gurgle that chilled the marrow, with a quivering of terra firma and the force of a hurricane, upward shot a river of boiling water, which submerged acres of surroundings. To our great pleasure a nice little breeze had arisen during the forenoon, and carrying the spray all in one direction, it enabled us to climb to the top of the castle, while the eruption was at its fullest strength. The roar was almost deafening, and the violent expulsion of steam and water, a column three by five feet and about 100 feet

high, caused a continual quiver of the marble-like structure the waters have been so many ages building. We could place our hands within an inch of the ascending column, and stood enchanted by its power. The formation does resemble the ruins of some ancient castle, and looms up some twenty feet above its mound, in a cunningly carved and queerly fashioned chimney, with terraces and steps on one side leading in quite regular succession downward. The silic-

ious deposits, hard as flint, have taken a great many varieties of

shapes, and all around the dome crystals have formed in beautiful profusion. The orifice through which the torrent poured was gorgeously lined with the whitest and daintiest bead-work imaginable. Overhead were the most brilliant rainbows, and far beyond the colossal water-column ascended still more beautiful columns of snow-white steam. The eruption continued for an hour, and it is needless to say we were chained to the spot until it was over.

Some one cried, "There goes Old Faithful," and away we ran half a mile up the river bank to give proper attention. But Old Faithful afforded an exhibition regularly every sixty-seven minutes, as he does the year round, so we had several fine opportunities to judge of his power in the course of the afternoon. He does even better than the castle, throwing a stream, six feet in diameter, from 150 to 200 feet high. The stream is nearly vertical, and in descending, the water forms a glittering shower of pearl drops, splashing into a succession of porcelain-lined reservoirs of every conceivable shape, and of many colored and vivid tints.

Hurrying across the river from Old Faithful because of a tumult in that direction, we came upon the Beehive, so named from its cone, which is a perfect picture of the old straw hive whose ascending torrent of 200 feet between us and the bright sunlight formed a rainbow that lent the fountain a splendor and glory indescribable. A few hundred yards below the Beehive is the Giantess, whose enormous crater of 18 by 15 feet gives forth such volumes of water that, during its eruption, Fire-hole River, a stream here 20 yards wide and a foot deep, is doubled in volume. A dismal groan from its dark, bottomless throat, dense volumes of steam and terrific underground thunder, a fearful rolling and clashing of waves, are the warnings of the Giantess, which, in a moment or two, lead to the deafening report with which the immense body of water is finally hurled into the air 100 feet or more.

Bestowing a parting glance at the Fan, whose stream is thrown into such shape as to justify the name, we re-crossed the river to the Grotto and Giant, by the same route which Mr. Hillhouse Raymond once took—except that we walked a log. He saw the Giant commence its wonderful spurt and, perfectly overcome by the exciting spectacle, leaped into the

river, wading waist deep to the opposite shore, and rushing up, waved his hat and shouted "Hurrah!" till out of breath. It is said of Prof. Hayden that he cannot compose himself in presence of a geyser in eruption, but losing recollection of the material world for the time, rubs his hands, shouts, and dances around the object of his admiration in a paroxysm of gleeful excitement. The Giant, indeed is king of the basin, and the engraving in these pages does it far better justice than our feeble description could. It sometimes continues its eruptions unremittingly for three hours.

The Grotto is the most singular piece of mechanism among all the geysers. Its dome is some 30 feet long and half as wide, and 20 feet high. It is a miniature temple of almost alabaster whiteness, with arches leading to some interior Holy of Holies, whose sacred places may never be profaned by eye or foot. The hard, calcareous formation about it is smooth and bright as a clean swept pavement. Several columns, resembling masses of pearls, rise to a height of eight or ten feet, supporting a roof that covers the entire vent, forming fantastic arches and entrances, out of which the water is ejected, during an eruption, 50 or 60 feet. The entire surface is composed of the most delicate bead-work imaginable, massive but elaborately elegant, and so peerlessly beautiful that the hand of desecration has not been laid upon it, and it stands without flaw or break in all its primal beauty—a grotto of pearls.

Darkness coming on, we built large fires on one side of the Grotto, and from the opposite side were afforded a sight, whose wonderful weirdness we can never forget. The volumes of water then resembled sheets of flame or molten metal and the drenched and dripping arches, through which the flickering blaze was plainly seen, seemed more like a fiery furnace than a real, live geyser. We camped by the side of the Grotto during the night, and with the confused noises of hundreds of geysers, steam vents and boiling springs in our ears, and reflection, which would not "down," upon the almost supernatural experiences of the day, there was more wakefulness than tired bodies warranted.

Here, as elsewhere, we made a great convenience of hot springs in the matter of dishwashing. With a million bar-

rels of boiling water within a few steps of any camp, who wouldn't utilize some, even to the boiling of meat, the "drawing of tea," or the cooking of beans? But when you wash dishes in Yellowstone Park hot springs, exercise some care about the kind of spring you utilize. We are told of a tourist who washed the dishes, his first attempt probably in a lifetime. Fifty or sixty feet distant was a very noisy little geyser, with its aperture in the center of a shallow, well-rimmed basin of about two and a half by four feet diameter, the water scarcely ever covering the flat bottom at a greater depth than two inches. Pitching the soiled tinware, knives, forks, towels, etc., into a champagne basket, and with an "Oh, no! I guess I can't wash dishes!" approaching his improvised dish-pan, unceremoniously dumped them in to soak while he placidly enjoyed his meerschaum. Suddenly, as if resenting the insult to its dignity, the little spouter spit the basin full to overflowing in a second, setting the contents in a perfect whirl, and the next instant, drawing in its breath, commenced sucking everything toward the aperture. Others at the camp heard an agonizing cry for help, and looking out, beheld the watcher, with hat off and eyes peeled, dancing around his dish-pan in a frantic attempt to save the fast disappearing culinary outfit. It was comical in the extreme. There would be a plunge of the hand in the boiling water, a yell of pain, and out would come a spoon; another plunge and yell, and a tin plate, and "Oh! ah! o-o-o!—e-e-e!" and a fork, etc.

On the summit of a neighboring knoll is the *Grand Geyser of the World*. When an eruption is about to occur, its 20x25 foot basin gradually fills with boiling water to within a few feet of the surface, then suddenly, with heavy concussions, immense clouds of steam rise to the height of 500 feet, and the whole great body of water, 20x25 feet, ascends in one gigantic column to the height of 90 feet. From the apex of this column five great jets shoot up, radiating slightly from each other, to the unparalleled altitude of 250 feet from the ground. The earth trembles under the descending deluge from this vast fountain; a thousand hissing sounds are heard in the air; rainbows encircle the summits of the jets with a halo of celestial glory. The falling water plows up and bears away the shelly strata, and a seething flood pours down the slope and into the river. It is the grandest, the most majestic and most terrible fountain

in the world. After playing thus for twenty minutes, it gradually subsides, the water lowers into the crater out of sight, the steam ceases to escape, and all is quiet. Its waters are of a deep, ultramarine color, clear and beautiful, and having a visible depth of 100 feet. The waving to and fro of the gigantic fountain, in a bright sunlight, when its jets are at their highest, affords a spectacle of wonder of which any description can give but a feeble idea. "Our whole party," says an appreciative tourist, "were wild with enthusiasm; many declared it was 300 feet high," but I have kept, in the figures as set down above, within the limits of absolute certainty.

THE EIGHT LARGEST GEYSERS IN THE WORLD.

Before leaving the subject of geysers we will note the fact that there are eight geysers of the Upper Geyser Basin, any one of whose belchings exceeds in volume and height any other in the world outside of Yellowstone Park, while for the frequency and regularity of the magnificent performance indulged in by them, they stand unrivalled in the known universe. Following are their chief features:

Giant—Diameter, 7 feet; height, 140 feet; lasts 3 hours. Giantess—Diameter, 18 feet; height of extreme jet, 250 feet; lasts 20 minutes. Beehive—Diameter, 2 feet; height, 219 feet; lasts 20 minutes. Grand Geyser—Diameter, 20 by 25 feet; height, 250 feet; lasts 20 minutes. Old Faithful—Diameter, 6 feet; height, 200 feet; lasts 20 minutes. Grotto—Diameter, 4 feet; height, 60 feet; lasts 30 minutes. Castle—lasts 10 to 30 minutes. While no tourist can expect to see Diameter, 5 feet; height, 100 feet lasts one hour. Fan—Height, 60 feet; these all spout in one day, he can always be certain of witnessing Old Faithful several times, and some of the others on any day of the week. They are all located in a small basin of two or three miles square.

Besides these, there are other, possibly scores, of geysers in our National Park, which far surpass the glory of those in Iceland, which hitherto have been called the grandest in the world. Ours are grandest in the frequency of their eruptions, in the quantity of water they spout, and in the height to which it is thrown, and also in the beauty of their delicately ornamented and often brilliantly colored chimneys and basins, built up and adorned by the minerals deposited from

their hot, silicious waters. There are 10,000 hot springs and geysers in our National Park, according to estimates of Prof. Hayden, and other explorers.

A DRIVE TO GARDINER RIVER.

Returning to the hotel, we started at noon of October 4th, for the Paint Pots, Gibbon Geyser Basin, and the Mammoth Springs of Gardiner river. The day was one of nature's loveliest, while the air was clear, and just a little frosty, so the eye could easily detect the location of a geyser or a boiling spring by the rising steam. Five miles away we passed through a picturesque defile at the base of Earthquake Cliff, where earthquakes have been shaking up things generally within the past century. Five miles further on, amid a rare confusion of jutting cliffs and tangled forest, are Gibbon Falls. They are 150 feet in height, and present a scene well worth the scramble down and back. A little further on and to the right is a pretty little lake swarming with feathered game, and before we ceased our comments on its beauty, we entered

GIBBON CANON.

The walls on the west side rose 2,000 feet above us, while on the east side the less pretentious pinnacles were clad in emerald robes of nature's coloring.

Soon after entering this defile we heard a puffing sound like the steady pulsations of some monstrous engine. A short curve in the road soon revealed the secret. An aperture in the perpendicular wall on our left, some five feet in diameter, was sending forth a volley of steam with a boom-boom-boom that never ceases, but beats as regularly as a tick of a clock. Midway in the cañon are the Salisbury Springs, a most unique cluster, named after O. J. Salisbury, Esq., the well-known stage man. From here we found small geysers and hot springs all along through the cañon; sometimes in the very edge of the river, again nearer by on hillsides, while two or three times where the road-bed was elevated a few feet they would spurt out of the side below us as if indignant at our intrusion.

Upon emerging from the cañon, Elk Park, a most beautiful natural camp ground, and large enough for an army of tourists, was spread out before us. One mile away to the left is



LOWER FALLS OF THE
YELLOWSTONE.—397
FEET HIGH.

the remarkable Monument Geyser, while quarter of a mile to the right the wonderful Paint Pots. Camp was made among lofty pines near the Paint Pots, and but a few steps from Gibbon River, and when the morning sun kissed the hill-tops, we hastened to inspect the region which it has been said would furnish cosmetics for all the belles of the universe. We found the Paint Pots like boiling springs in general outlines, but instead of containing the latter's ethereal water they emit a stream of hot fluid of the consistency and character of paint. But their charm lies in the different vivid colorings of each. The first was white as the pure, hard finish that is put in houses over plaster, and indeed this has been used for plaster and paint with eminent success. The next one was a delicately tinted pink; the next one a deep red, and another one a rich deep brown.

They differed in the size of their openings from a foot and a half to ten and twelve feet in diameter. When these paints are exposed to the air and cold, they become as hard as granite, and when partly cooled they can be moulded like putty or stiff dough.

Several of the paint pots were on a side hill, and the overflow on earth and rock produced for many yards of their precipitous course the finest kaleidoscopic coloring that the mind can conceive.

One of our party here slyly moulded some of the thick reddish brown paint into the shape of a doughnut and the form and coloring were so perfect that at least one hungry tourist was induced to select it from the basket, and try teeth upon it at the next lunch time, notwithstanding its weight.

GIBBON GEYSER BASIN.

Reluctantly pursuing our journey we were soon trotting along to what is known as the Gibbon Geyser Basin. This plateau embraces 25 square miles, and seems to be not only the most elevated and largest, but may also have been the most important and oldest geyser basin in the park. It certainly is the hottest and most dangerous for pedestrians. To the right of the road a few rods is the Mammoth geyser, and well it deserves its name. When not spouting, one can go up to the crater and study its beaded chimney, and look down its long, dark throat, whose infernal gurgle will make one shudder, for the cold chills will creep through his mar-

row in spite of himself. Its chimney is about four feet high, with an orifice about two feet by three feet in diameter. Its voluminous outbursts have fairly disemboweled the mountain at whose base it stands for a distance of a hundred feet or more, and at least forty feet in width.

While walking around in this excavation the ground began to shake beneath us, and we stood not upon the order of our going, but went pell mell toward firmer ground. We were none too soon in our egress, for, after a few groans and puffs of steam, it threw such a volume as we had never yet seen, and lifting the water many feet above us, it hurled it into its surrounding basin; thence it plowed like a giant river that had burst its bounds and for a short time flooded the lower part of the plateau.

Provided with good heavy sticks to sound our way, we were soon in the midst of other geysers. One of the first seemed to be wholly sulphurous, and the fumes were so strong that it would strangle us to inhale it. Around its orifice were the finest crystals of deep yellow sulphur so delicately interlaced that even a breath of air would displace them; then again there would be great chunks of sulphur, and from the edges and jagged sides in the orifice, which was several feet in diameter, hung a network of stalactitic beauties, while the water looked as clear and pure as any other spring.

Another geyser was spouting, and drew our attention as if fearful that we might pass it unnoticed. Around it were little drifts like newly fallen snow of large flakes, which when tasted, proved to be pure alum crystals still moist with spray and soft as snow itself. A neighboring spring burst from amid terraces hard as marble and of alabaster whiteness.

Ten miles further our road ran over the famous mountain of obsidian or volcanic glass—the *only glass carriage road on the continent*. The mountain is near the foot of Beaver Lake, and rises in columns and countless huge masses, many hundreds of feet high, from a hissing hot spring. The steep, smooth surface was, of course, a barrier to the progress of the explorers, not even an Indian or game track being discoverable over it. Great fires were built on the glass, to thoroughly heat and expand it, after which cold lake water was dashed on it, causing the glass to cool, and large fragments to break off from the surface. These were broken into small pieces with sledges

and picks. The glass is very hard, and is used by the Indians for making arrow heads, weapons and tools. The eastern palisade of the Grand Cañon of the Gibbon River, for about two miles, also consists of vertical pillars, hundreds of feet high, of this glistening, black, yellow, mottled or banded volcanic glass.

GARDINER RIVER HOT SPRINGS.

The mammoth hot springs of Gardiner River, 50 miles from the National Park House, were at last in sight. The gorge in which the springs are located is over 1,200 feet at the top above the level of Gardiner River, into which the waters flow. From the river up there are fourteen terraces, and the largest and hottest springs are near the top. As the waters have rolled down, they have deposited their lime until they have built huge bowls or reservoirs, one after another. One can walk almost anywhere on the terraces, as they are secure and firm. There is so much lime that it gives the whole a white appearance, while the inside of these natural bath-tubs look like porcelain.

The main terrace has a basin 30x40 feet, and the water is constantly boiling several inches above the surface; but a careful approach will permit you to peep into the reservoir and get a glimpse of the mossy vegetable matter that lines its sides, of a rich, light green that constantly waves with the ebullition of the water, and as the blue sky is reflected over all, it lends an enchantment that no artist can duplicate.

But one other similar cluster of springs is known in the world, and that is in New Zealand. The first impression on beholding is that of a snowy mountain, beautifully terraced, with projections extending out in various directions, resembling frozen cascades, as though the high, foam-crested waves, in their rapid descent over the steep and rugged declivity, were suddenly arrested and congealed on the spot in all their native beauty. There are fifty or sixty of these springs of greater and smaller dimensions, extending over an area of about a mile square; though there are remains of springs of the same kind for miles around, and mountains of the same deposit, overgrown with pine trees, perhaps hundreds of years old. Most of the water is at boiling heat, and contains in solution a great amount of lime, sulphur and magnesia, with

some soda, alumina and other substances, which are slowly deposited in every conceivable form and shape as the water flows along in its course down the mountain side.

On each level or terrace, there is a large central spring, which is usually surrounded by a basin of several feet in diameter, and the water, after leaving the main basin at different portions of the delicately-wrought rim, flows down the declivity, step by step, forming hundreds of basins and reservoirs of every size and depth, from a few inches to six or eight feet in diameter, and from one inch to several feet in depth, their margins beautifully scalloped with a finish resembling bead-work of exquisite beauty. Underneath the sides of many of the basins are beautifully-arranged stalactites, formed by the dripping of the water; and, by digging beneath the surface at places where the springs are inactive, the most delicate and charming specimens of every character and form can be obtained—stalactites, stalagmites, grottoes, etc., all delicately arranged as the water filtrates through the crevices and perforations of the deposit.

Here in these deposits, and in the depths of crystal fountains, all the hues of the rainbow are seen and arranged so gorgeously that, with other strange views by which one is surrounded, you almost imagine yourself in some fairy region, the wonders of which baffle all attempts of pen or pencil to portray them.

Besides the elegant sculpturing of this deposit, imagine, if you can, the wonderful variety of delicate and artistically arranged colors with which it is adorned. The mineral-charged fluid lays down pavements here and there of all the shades of red, from bright-scarlet to rose-tint, beautiful layers of bright sulphur-yellow, interspersed with tints of green—all elaborately arranged in nature's own order. The water is used by the scores of invalids already flocking here to be healed of their maladies. Here, also, are the small bath-houses erected by the pioneers.

Here is the second private dwelling erected in the Park—that of J. C. McCartney, built in 1871. The substantial headquarters building of the present park superintendent, Col. P. W. Norris, is here, and within five miles are four important mountain passes, six yawning cañons of local note, the confluence of five noble rivers, and five grand cataracts o

falls, each from 40 to 200 feet high, besides numerous other objects of general interest. Here also is the Devil's Thumb, a queer and appropriately named formation near the springs, and the name reminds one that the old mountaineers and trappers have been peculiarly lavish in the application of the infernal vocabulary from end to end of Wonderland. Among the titles to be handed down in history are the "Devil's Slide," "Hell Roaring River," "Devil's Den," "Fire Hole Prairie," "Colter's Hell," "The Devil's Hoof," "Hell-Broth Springs," "Locomotive Jet," etc.

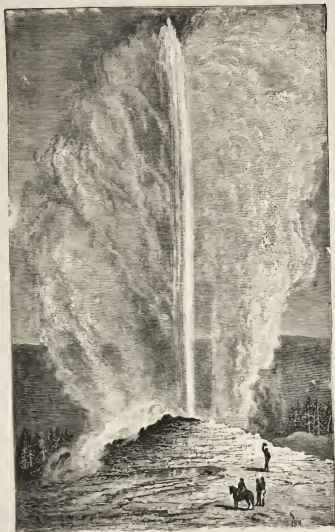
Some of these are now being changed, much to the disgust of the moss-backs. "W-w-ill I g-guide ye to the Yel-l-el-low-stone P-p-park?" said Tom Tieknor, the stuttering geyser guide to a touring party last season. "I c-can't—old P-p-professor Hay-Hayden's b-b-been thar a-a-and ch-ch-changed all the o-o-old names, and I'd g-g-git lost!"

THE LAKE, FALLS AND GRAND CANON

of the Yellowstone are situated from 25 to 35 miles east of the hotel. The trail first led us along the meadowy valley of the East Fork of Firehole River, occasionally passing a beautiful spring, hot or cold, then meandering zigzag through tall pines to reach the summit of an opposing mountain range, where Mary's Lake, a most beautiful diadem amid the rocky walls on the very tiptop, joins attraction with all the romantic belongings of a well-ordered camp-ground in the wilderness to win the intruder to at least an hour's nooning. Descending, with a magnificent panorama of the Yellowstone Valley in the foreground and countless hot springs and unnamed geysers on either side, the trail finally almost loses itself in the luxurious grasses bordering the northwest arm of

YELLOWSTONE LAKE.

The lake is 120 miles below the head of the Yellowstone river, and its peculiar position and topography, as well as other natural features, render it one of the most remarkable inland seas in the world. Its shape is that of a hand with the four fingers and thumb, the latter being too large for the correct proportions. Its altitude is 7,788 feet above sea level, and it is situated in a vast depression that can be seen for miles away. Its western and northern shores are pebbly beaches like the large lakes. It is 30 miles long and from 10



"OLD FAITHFUL."

to 15 miles wide, and contains numerous heavily-timbered islands. Around its edges are numerous hot springs, near which one can stand and fish from the main body of the lake; without taking it from the hook, he can throw his line into a boiling spring and cook his fish at once.

Cold, gray mountains lift their snowy heads, and seem to gaze with just admiration at their reflections in the vast

wealth of blue below. Countless swan, geese, pelican, ducks, and seagulls were seen floating on the placid bosom of the lake and flying all around us, while trails of wild animals betrayed their presence in large numbers.

The rare specimens found around the lake shore are worthy of mention. In one locality are tool handles, knives and forks, cooking utensils, and many implements in a clay slate formation that are formed by the action of the water.

A little further on is a deposit of red sandstone boot soles as perfect as can be. Again there were shaving cups of still another formation, which, when split, will form the cup and cover. We may mention here that in Wonderland we encountered nearly every variety of quartz, including the agate, amethyst, chrysoprase, flint, jasper, malachite, plasma, ruby, chalcedony, and carnelian. There are also the azurite, amphibole, feldspar, opal, obsidian, and pumice. Specimens of silicified wood, embedded animal life, like the "crystalized grasshoppers" displayed by Prof. Marshall, the well-known lecturer, and all manner of curious semi-mineral formations, are very abundant. The deposits surrounding many of the geysers and springs are not only wonderful in an architectural way, but are transcendently beautiful for their blending of all shades of striking colors.

The name of "Diamond Beach" has been given to a five-mile stretch of shore on the east side of Yellowstone Lake, because the surface is composed almost entirely of obsidian. With the sun shining brightly, it sparkles and flashes as if it were indeed composed of a bed of cut diamonds, rubies and emeralds.

An Eastern tourist had been spinning some incredible fish yarns, when one of the party, turning to an old mountaineer, said:

"Bill, that gets away with fishing in this country, don't it?"

"Wal, I don't know 'bout that."

"Do you mean to say that you have caught more and larger fish?"

"No; but I have caught some purty big fellers."

"Come, now, tell us the weight of the largest trout you ever caught."

"Wal, I can't exactly tell as to the weight, but you folks can figure on it. Now, you know it is over two hundred miles around this yer lake. Put that down. As I said before, I don't know the weight of the biggest trout I ever yanked out, but I did haul one up on the beach, and after I landed him *the lake fell three feet*, and you can see by that water mark over yonder it hasn't riz since."

Near the foot of the Lake, and on the north shore, is a natural bridge spanning, at a height of 40 feet, the tumultuous waters of Bridge Creek. It is twenty-nine feet long and its arch ten feet of solid rock, of sufficient width to afford a fine carriage way. Located in one of the most romantic glens in the Park, and also on a route which eventually would be chosen for a road in order to avoid marshy ground near by, it is at once a most pleasing addition to the long list of attractions and a feature of practical utility.

MUD VOLCANO, DEVIL'S DEN AND SULPHUR MOUNTAIN.

Passing down the Yellowstone twelve miles, through a beautiful open meadow, we reach the Devil's Den. A natural arch-way, slightly in shape and attractively mineral stained, is cut out of a stupendous wall of rock, the opening going in as straight as a hall isle, being six feet high and three feet wide. A stream of boiling, sulphurous water perpetually flows from this dark hole, while volumes of steam, suffocatingly charged with sulphur, are being convulsively discharged as if it were indeed the outlet of the infernal regions.

A few hundred yards east of the Devil's Den we suddenly stumble upon the stupendous Mud Volcano. It struck us as dangerous, for it was shaking terra firma for several rods around. It roars, we are told, "like thunder," and throws hot mud, no one knows how many hundred feet high, for we believe no one has seen it in its grandest state of eruption, but the tallest trees in the vicinity are covered with mud from its dismal, 30 by 40 foot mouth. Those who have seen it endeavor to spout say it vomits a huge, black column of mud, quite 12 feet in diameter at the base, rising from the crater 40 or 50 feet high, when it is parted into branches, covering a radius of immense extent with its nauseating sediment.

Three miles below this is Brimstone Mountain, where whole train loads of almost pure sulphur could be shoveled up without much effort. Adjoining it is a sulphur water geyser, a boiling alum well, and many other curious sights. A half-hour's brisk ride from here, by easy trail, took us to the

FALLS AND CANON OF THE YELLOWSTONE.

The trail leads along and within a few yards of the river, and for half a mile above the upper falls a succession of the most picturesque rapids imaginable, in a landscape unrivalled for beauty of vegetation, as well as of rock and glen, prepared us for some grand culmination like the 140-foot leap of the river into the wilder chasm beneath. We dismounted, and stepped out upon a shelf of rock, where all the nearer beauties could be taken in at a glance. The river, just before making that grand leap, narrows to a width of less than 100 feet, and the two confronting rocks overhanging the verge at the height of a hundred feet or more could be readily united with a bridge, from which a view of some of the grandest of natural scenery in the world could be obtained.

The Upper and Lower Falls are only half a mile apart, and midway between them are the famous Crystal Cascades of Cascade Creek, where a pleasant surprise awaited us in the shape of a well constructed bridge, from which a good view of the cascades could be obtained. The cascade consists of a fall of five feet, followed by one of fifteen into a little grotto between two tall boulders, which nearly form an arch at the top. A deep pool is formed at their base, where the waters rest for an instant, and are then forced to roll from the grotto over a slanting slab of one hundred and twenty-five feet to the Yellowstone below. Yellowstone River widens to a hundred yards between the falls, and flows with a gentle current.

The bluffs converge again near the lower falls, the one on the west side bulging out as if to intercept the stream; but the waters have held their sway for a hundred feet, and with a wild roar they dash over the verge, *three hundred and ninety-seven feet*. The awful majesty of the scene, the opening of the grandest cañon in the world at our feet, with a fall of such wonderful height and indescribable beauty, afforded a picture

worth a world of trouble to obtain. The foaming, frothing spray lifted high above the verge of the cataract, and rose a column of fleecy purity. All was grand indeed. Nearly a mile below the falls, where, upon Lookout Point, 1,500 feet perpendicularly above the great river one seems suspended 'tween heaven and earth, we for many moments feasted our eyes upon the singular architecture and artistic coloring.

The mineral-stained walls appeared to glow with a cold inward radiance of their own, and gave back tints of orange, pink, yellow, red, white, and brown, of a vividness hopeless to describe, and which would overtax the powers of the greatest artist to portray. The lower slopes, wet with spray, were decorated with the rich hue of vegetation, while through the mist, the river, a ribbon of brilliant green, embroidered with silvery foam, far below, pursued its tortuous course, and the eye followed it down through this ocean of color until, two or three miles away, a curve in the cañon hid it from view. Pinnacles and towers so lofty, unique, and massive as to mock at the masonry of man, rose about us, and with forests of richest green, clothing the background far as eye could reach, lent all romance and picturesqueness which are so often lacking in the surroundings of our most noted cañons. From one to three miles below the great Falls are numerous cascades where mountain streams leap over the cañon walls into the profound abyss below, a distance of from 1,000 to 2,500 feet.

TOWER CREEK AND FALLS.

Tower Creek and Falls are over 20 miles below the Great Falls of the Yellowstone. About 200 yards above Tower Creek's entrance into the Yellowstone, the stream pours over an abrupt descent of 156 feet, forming one of the most beautiful falls to be found in any country. Columns of volcanic breccia, rising fifty feet above the falls and extending down to the foot, stand like gloomy sentinels, or like gigantic pillars at the entrance of some grand temple. Some resemble towers, others the spires of churches, and others still shoot up as little and slender as the minarets of a mosque. Some of the loftiest of these formations, standing like sentinels upon the very brink of the fall, are accessible to an expert and adventurous climber. The position attained on one of their

narrow summits, amid the uproar of waters and at a height of 250 feet above the boiling chasm, as the writer can affirm, requires a steady head and strong nerves; yet the view which rewards the temerity of the exploit is full of compensations. Many of the capricious formations in the creek bed wrought from the shale excite merriment as well as wonder. Of this kind especially is a huge mass sixty feet in height, which, from its supposed resemblance to the proverbial foot of his Satanic Majesty, is called the Devil's Hoof. The scenery of mountain, rock, and forest surrounding the falls, is very beautiful. Here, too, the hunter and fisherman can indulge their tastes with the certainty of ample reward. The visitor of future years will find no more delightful resting place than just above Tower Falls.

The sides of the chasm are worn into caverns lined with variously-tinted mosses, nourished by clouds of spray which rise from the cataract; while above, and to the left, a spur from the great plateau rises over all, with a perpendicular front of 400 feet. In appearance the fall strongly resembles Minnehaha, but is several times as high, and the volume of water is at least eight times as great. "Nothing," says Lieutenant Doane, "can be more chastely beautiful than this lovely cascade, hidden away in the dim light of overshadowing rocks and woods, its very voice hushed to a low murmur, unheard at a distance of a few hundred yards. Thousands might pass by within a half mile and not dream of its existence; but once seen, it passes to the list of most pleasant memories." A fine view of the Tower Falls can be had from an easily-ascended cliff above them. but a better one, a prospect that is simply enchanting, can be obtained by walking down to the mouth of Tower Creek, 200 yards, and following up the stream to their feet. Two hundred yards above the falls is a finely sheltered, picturesque camp, with grass, wood, and water abundant.

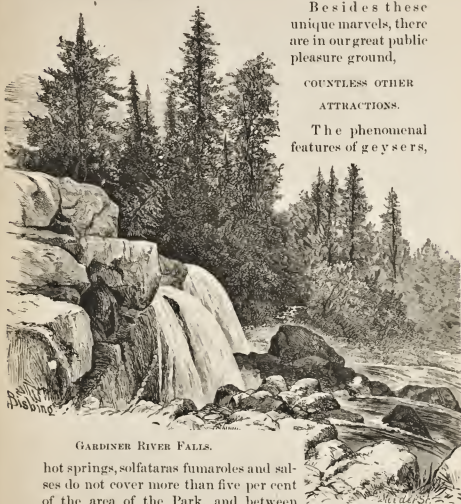
Immediately opposite the mouth of Tower Creek, across the Yellowstone River, is the celebrated Specimen Mountain. There the ground is strewn with trunks and limbs which have been petrified into solid, clear white agate. Continuing our search we find also animal petrifications, stone snakes, toads and fishes. Digging down among petrified roots, are found large clusters of the most beautiful amethystine crys

tallizations of all the red shades, from delicate pink to deep cherry. The scenery from the summit of Specimen Mountain is indescribably grand.

Besides these unique marvels, there are in our great public pleasure ground,

COUNTLESS OTHER
ATTRACTIVE.

The phenomenal features of geysers,



GARDINER RIVER FALLS.

hot springs, solfataras, fumaroles and sal-ses do not cover more than five per cent of the area of the Park, and between them stretch scores of miles of beautiful valley, generally covered with excellent grass, while the greater part of the mountains which bound them is covered with dense forests of conifers (interspersed with those great grassy slopes, which are so marked a feature of the timbered areas of the Rocky Mountains). Those fond of hunting will find abundance of water fowl of various kinds; pine-grouse, prairie-chickens and

sage-hens, rabbits and squirrels; and for the rifle, elk, antelope, deer, big-horn or mountain sheep, bears and occasionally a band of mountain buffalo.

There are countless quiet nooks, where one can camp under the fragrant pines beside green meadows gemmed with numberless lovely wild flowers, and watered by sparkling brooks, across which the industrious beaver still builds his curious dams, and in whose limpid waters the daintyspeckled brook-trout watches for his prey. Not only are there scores of grand mountains (few of which have ever felt the tread of civilized man), lifting in savage desolation of rock and snow their craggy sides and rugged summits above the timber line far up among the clouds, but innumerable sunny glades and shady dells, whose quiet, restful beauty is in marked contrast to the wild sublimity of the mountain peaks in whose shadows they nestle.

Beyond Specimen Mountain, in fact the entire vast region stretching eastward from Yellowstone Lake and River to the Big Horn Mountains, over 100 miles away, we are told, presents a continued succession of attractions, but our time was exhausted, and we could only reluctantly bid all the wonders, seen and unseen, adieu, and make a hasty retreat to National Park House, which was reached by a hard horse-back ride of forty miles on the evening of our eighth day in Wonderland. Can any reader doubt, after perusing this imperfect sketch, that we saw more marvels than a month's journey in any other quarter of the globe could disclose? Foreign travelers of great note have unselfishly named this region "The Wonderland of the World," and evincing at least an equal appreciation, we desire to say that the thousands of Americans who annually dissipate money and time in sight-seeing in other lands may journey round the globe, but they will not view nature in such magnificent, sublime or striking forms as here in this National Park of 55 by 60 miles in extent, within a week's travel of their homes.

Hon. R. W. Raymond has said, "To bid farewell to such a scene is like descending from the heights of Heaven. Precious indeed is the memory of so fair a vision;" while Prof. Hayden, in years past the sober-minded chief of the geological survey, exclaims: "Such a vision is worth a lifetime, and only one of such marvelous beauty will ever greet human

eyes," and we think the time has come to ring a change on a somewhat familiar exhortation and chime in, "See Wonderland and die."

INFORMATION FOR TOURISTS.

A daily line of first-class Concord coaches was established last October by Messrs. Salisbury & Co., and G. W. Marshall between Dillon, the present terminus of the Utah & Northern Branch of the Union Pacific Railway, and the Lower Geyser Basin via Virginia City, Montana, and the same will be operated during the tourist season of 1881. Mr. Marshall is also prepared to carry tourists by carriage or saddle train from his hotel in Lower Geyser Basin, to any part of the Park, and also furnish entertainment, tents, bedding, etc., to parties making such trips at rates given below. The distance by stage from Dillon to Lower Geyser Basin is 155 miles; time, 26 to 30 hours, which period can be divided into a two days' daylight trip, should parties prefer to tarry at Virginia City or Henry Lake. Time, from Omaha to the Geysers, about four and a half days.

From the hotel in Lower Geyser Basin, distances *by carriage road* are as follows:

LOWER GEYSER BASIN TO—	Miles.
Midway Geyser Basin.....	4
Upper Geyser Basin.....	9
Falls of the Gibbon.....	12
Paint Pots, Elk Basin.....	16
Gibbon Geyser Basin.....	23
Obsidian Cliffs.....	34
Gardiner River Hot Springs.....	50
Falls of the Madison.....	6
Riverside.....	12
South Fork of the Madison.....	25

From Lower Geyser Basin to prominent attractions in the central part of the Park (at present *by trail or bridle-path*), distances are as follows:

LOWER GEYSER BASIN TO—	Miles.
Mary's Lake.....	10
Sulphur Mountain.....	30
Mud Volcanoes.....	33
Yellowstone Lake.....	20
Yellowstone Falls and Cañon.....	35
Tower Falls.....	53
Fairy Falls.....	8
Two-Ocean Pond.....	25
Specimen Mountain.....	55
Crystal Cascade.....	35
Petrified Forest.....	50

All these points can be visited in from 12 days to two weeks (after arrival in the Park), and the more prominent ones in eight days, but no one will be satisfied with less than two or three weeks, and our advice is, don't go expecting to make it so short.

Splendid camp grounds surround the National Park House, and indeed, can be found in every nook and corner of the Park.

Parties of twenty-five or more, from Omaha to Lower Geyser Basin and return, \$127 each. Parties of ten or more purchasing tickets at the same time, can obtain a rate of about \$144 each, from Omaha to Lower Geyser Basin, Yellowstone Park and return. Tickets will include first-class accommodations by rail and stage, and will be made good for a sufficient period to enable purchasers to enjoy all leading attractions. Proportionately low excursion rates will also be given parties from Omaha to the point of departure of stages on the U. & N. Ry. and return, in case they desire to furnish their own transportation into and through the Park.

EXPENSES IN THE PARK.

Mr. G. W. Marshall, at the National Park House in Lower Geyser Basin, will transport parties to various points or outfit them at following rates; Three-seated carriage and driver, \$8 per day; single-seated rig and driver, \$6 per day; saddle horses, \$2.50 per day for 3 days or more, or \$3 for single day; pack animals, \$2 per day; attendant who will act as guide, packer and cook, and furnish his own animal, \$4 per day. Bedding, tents and board will be furnished to parties on Park tours at very reasonable rates; board at hotel, \$3 per day, and at Henry Lake House at same rates; parties of 20 or more can engage board at either hotel at \$2.50 per day each. Parties who desire to outfit and board themselves while making excursions in the Park, can buy all necessary provisions, ammunition, fishing tackle and bedding of Mr. G. W. Marshall at a reasonable advance (for freightage) over prices at Virginia City, or cooking utensils, bedding, tents, etc., will be leased on favorable terms to proper parties. From these figures tourists can calculate within a few dollars what a 10 or 12 days' tour of Wonderland will cost. Our estimate of the entire expense of the trip for one person from

Omaha to the Park and return, including horse hire, board or provisions, etc., for 10 days in the Park is from \$225 to \$250.

THE COST OF OUTFITS.

For the benefit of those who may desire to purchase or hire their own outfits, to be used beyond the railway, we append the cost of leading necessities at Virginia City, Dillon, or other outfitting points. Mr. T. J. Farrell, of Virginia City, makes a specialty of outfitting tourists with ponies, carriages, etc., and can be relied upon for "square" treatment.

Saddle ponies.....	\$ 30 00 to \$ 40 00
Pack mule or pony.....	35 00 " 50 00
Saddles.....	10 00 " 25 00
Pack saddles.....	3 00 " 5 00
Light spring wagon.....	100 00 " 175 00
Farm wagon.....	100 00 " 150 00
Team of two horses.....	100 00 " 225 00
Tent.....	15 00 " 30 00
Breech-loading rifles.....	25 00 " 50 00
Blankets, per pair.....	5 00 " 8 00
Flour, per 100 lbs.....	3 00 " 4 50
Beans, per lb.....	12 " 15
Coffee, Rio, per lb.....	28 " 30
Tea, per lb.....	40 " 1 25
Rice, per lb.....	15
Dried fruit, per lb.....	16 " 20
Yeast powder.....	40 " 50

GUIDES, ETC.

Guides, who are no longer essential to "point out the way," but act as cooks, take care of the camp equipage, "pack" or load, make camp, take care of the animals, and are generally very useful in taking all care from the mind of the tourist, can be had at \$3.50 to \$5 per day. They have saddle animals, pack animals and wagons. For the use of the riding and pack animals, they charge from \$1 to \$2 per day, or for team and wagon with driver, \$3.50 to \$6 per day. They will also contract to transport and furnish rations to parties, taking all the purchasing, etc., into their own hands. We have in mind a party of four gentlemen who made the "grand round" of Geyserland in this way at a total expense, after leaving Virginia City, of \$40 each for 12 days. This included "board," transportation, and all necessary attendance.

ELEVATIONS IN THE NATIONAL PARK.

	Feet.		Feet.
Benla Lakes.....	7,525	Mt. Blackmore.....	10,134
Lewis Lake.....	7,828	Mt. Washburne.....	10,348
Yellowstone Lake.....	7,788	Red Rock Pass.....	7,211
Shoshone Geyser Basin.....	7,880	Henry's Lake.....	6,443
Upper Geyser Basin.....	7,390	Crater Hill Springs.....	7,979
Lower Geyser Basin.....	7,260	Mouth of Tower Creek.....	6,207
Tyghee Pass.....	7,063	Devil's Slide.....	5,160
Yellowstone Falls.....	7,700	Madison Lake.....	8,301
Gardiner River Hot Springs...	7,035	Mouth of Gardiner River	5,360
Head of Grand Cañon.....	7,162	Top Lower Falls Yellowstone..	7,485
Mud Springs.....	7,712	Divide bet. Yellowstone and	
Second Cañon of Madison.....	6,570	Madison.....	8,164

WEATHER IN THE NATIONAL PARK

Following is a summary of weather reports in Yellowstone Park, by Superintendent Norris, during the past three tourist seasons:

FOR JULY.

1878—That portion of July which was taken would average, at sunrise, 57°; at midday, 80°; and at sunset, 74°.

1879—The morning average was 59°; at midday, 80°; and at sunset, 69°; mean, 67°.

1880—The average at sunrise was 50°; at midday, 68°; and at sunset, 62°; mean, 60°.

FOR AUGUST.

1878—For the month of August the morning average was 44°, and ranging from 32° to 60°; at noon, average 78°, and ranging from 62° to 88°; at sunset, average 64°, ranging from 48° to 82°.

1879—The average at sunrise was 49°; at midday, 74°; and at sunset, 69°; mean, 67°.

1880—The average at sunrise was 50°; at midday, 68°; and at sunset, 62°; mean, 60°.

FOR SEPTEMBER.

1878—For September the average at sunrise was 39°, ranging from 24° to 60°; at noon, average 61°, ranging from 38° to 78°; at sunset, average 51°, ranging from 36° to 74°.

1879—The average at sunrise was 39°; at midday, 60°; and at sunset, 53°; mean, 51°.

1880—The average at sunrise was 41°; at midday, 66°; and at sunset, 58°; mean for the month, 55°.

FOR OCTOBER.

1878—The first 15 days in October average 41°, ranging from 24° to 54°; noon, average 57°, ranging from 46° to 70°; and at sunset, average 51°, ranging from 42° to 60°.

1879—The average at sunrise was 22°; at midday, 52°; and at sunset, 30°; mean, 35°.

1880—The average at sunrise was 32° ; at midday, 57° ; and at sunset, 42° ; mean for the month, 44° .

This should be "delicious reading" for the habitues of eastern watering places, where mercury, from July to October, ranges for days at a time up in the eighties and nineties. Frosty nights are the rule in Yellowstone Park during the entire period covered by the above notes.

RULES OF THE INTERIOR DEPARTMENT.

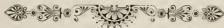
1st. All hunting, fishing, or trapping within the limits of the Park, except for purposes of recreation, or to supply food for visitors or actual residents, is strictly prohibited; and no sales of fish or game taken within the Park shall be made outside of its boundaries.

2d. Persons residing within the Park, or visiting it for any purpose whatever, are required, under severe penalties, to extinguish all fires which it may be necessary to make, before leaving them. No fires must be made within the Park except for necessary purposes.

3d. No timber must be cut in the Park, without a written permit from the superintendent.

4th. Breaking the siliceous or calcareous borders or deposits surrounding or in the vicinity of the springs or geysers, for any purpose, and all removal, carrying away or sale of specimens found within the Park, without the consent of the superintendent, is strictly prohibited.

5th. No person will be permitted to reside permanently within the limits of the Park without permission from the Department of the Interior, and any person now living within the Park, shall vacate the premises now occupied by him within thirty days after having been served with a written notice so to do, by the superintendent or his deputy, said notice to be served upon him in person or left at his place of residence.



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The home stations, at G. Sawtell's for Breakfast, and Henry's Lake for Dinner, are supplied with every requisite for the table, and first-class meals can be obtained there at reasonable prices. At the terminus of the line, in Lower Geyser Basin, Tourists wishing to explore the Wonderland of America, will find superior hotel accommodations, and can obtain first-class, well-broke saddle and pack horses, at \$2.50 per day, or three-seated carriages, with driver, at \$8.00 per day. U. S. Post Office at Fire Hole, Lower Geyser Basin.

F A R E S.

Virginia City to Fire Hole Basin.....\$20.00 | Return Tickets.....\$35.00

Special rates to parties of ten or more, and very low round trip rates from Omaha or Kansas City to the Park and return, in connection with the U. P. R'y.

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UNIVERSITY OF MICHIGAN, DEPARTMENT OF MEDICINE AND SURGERY, }
Ann Arbor, February 13, 1879. }

Sodie Chloride, much; Sodie Bromide, traces; Calcic Fluoride, traces; Sodie Bicarbonate, traces; Magnesic Sulphate, moderate; Alumina Oxide, traces; Silicie Oxide, traces; Ferrous Sulphate, traces; Lithic Bicarbonate, moderate; Sodie Phosphate, moderate; Free Sulphur, traces; Organic Matter, minute trace.

Comparing these constituents to those of the water from Hathorn spring, Saratoga, and other celebrated water, I find the comparison favorable to the Montana water.

VICTOR C. VAUGHN, M. D., Ph. D.
Lecturer on Medical Chemistry in the University of Michigan.

[The water contains 65 per cent of free sulphur, but in evaporating for the residue sent Prof. Vaughn, the sulphur and other important properties escaped, as the evaporation was made in an open porcelain vessel]

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